

6.0 WASTE MANAGEMENT

The following paragraphs present an overview of the waste management strategy for the Building 776/777 Cluster.

6.1 RCRA/CERCLA Transition

Wastes generated during decommissioning will be accumulated, staged, stored, and treated in accordance with this section of the DOP. During decommissioning the distinction between "process waste" and "remediation waste" will be maintained to ensure proper management. Process waste includes all liquid waste chemicals and wastes generated as a result of normal building operations or deactivation activities (e.g., containerized waste generated prior to approval of this DOP [November 5, 1999]; mixed residues; and liquids, sludges, and oils in tanks and ancillary equipment). Remediation waste is all waste, media, and debris generated from decommissioning activities performed under this DOP, all solid waste chemicals (no matter when generated), and residual liquids or sludges remaining in RCRA Stable or Physically Empty tanks.

Hazardous and mixed wastes designated as process waste will continue to be managed in compliance with both the substantive and administrative requirements of RCRA, CHWA, CHWR, and the Site's RCRA Part B Permit. Hazardous and mixed wastes designated as remediation waste will be managed in accordance with the Applicable or Relevant and Appropriate Requirements (ARARs) presented in Section 7 of this DOP and with the remediation waste management requirements described in Building 776/777 Operations Order OO-776-374. The ARARs and Operations Order provide project managers and waste management personnel with a level of flexibility appropriate in managing hazardous and mixed wastes during decommissioning.

6.2 Waste Types and Volumes

As discussed in Section 2, beginning in 1958 and continuing through 1969, Building 776/777 housed the Site's Pu foundry, fabrication operations, and parts assembly operations. Subsequent to the fire in 1969, the primary function of the building turned to waste and residue handling, disassembly of retired weapons components, special projects, and support operations, such as laboratories. As a result, a variety of regulated wastes are currently managed and stored in Building 776/777, and additional waste will be generated during decommissioning. Table 12 presents a list of the process waste stored in the building on June 1, 1999. Table 13 provides an estimate of the remediation waste types and volumes that will be generated during decommissioning.

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Table 12. Building 776/777 Waste Inventory

Waste Type	Number of Packages
Sanitary	35
Non-Rad/Haz	3
Non-Rad/TSCA	2
LLW	297
LL TSCA	3
LLM	74
TRU	227
TRU TSCA	1
TRM	75
RES	1161
REM	540

Source: WEMS Package Inventory Report, 06/01/99

Table 13. Estimate of Wastes to be Generated During Decommissioning

Category	Sub-Category	Container Type	Volume (m ³)*	Proposed Destination
Radioactive Waste				
TRU/TRM Waste				
	Straight TRU	SWB/55 Gallon Drums	2,264	WIPP
	TRU Mixed (TRM)	SWB/Drums	520	WIPP
	TRU/TRM Liquids	Drums	5	Treatment-WIPP or Approved TSD
LLW/LLM Waste				
	Straight LLW (including asbestos)	Crates/Drums	4,969	Nevada Test Site (NTS), Envirocare
	Structural Rubble	Crates/Drums	3,400	NTS, Envirocare
	Contaminated Recycle Metal	Crates/Drums	1,100	Approved Vendor
	TSCA (PCBs)	Drums	1	Approved TSD
	LLW Liquids	Drums	4	Approved TSD**
	LLM	Crates/Drums	500	Approved TSD**
	LLM Liquids	Drums	6	Approved TSD**
Non-Radioactive Waste				
Hazardous Waste				
	RCRA Solids	Crates/Drums	40	Approved TSD
	RCRA Liquids	Drums	4	Approved TSD
TSCA				
	PCBs	Crates/Drums	1	Approved TSD
Sanitary				
	Routine Sanitary	Crates/Drums	809	Sanitary Landfill
	Special Sanitary (Asbestos, Be)	Crates/Drums	10	Approved TSD

* Waste volume estimates include demolished structures.

** Assumed to include on-Site treatment facilities (e.g., RCRA Unit 374.3).

6.2.1 Hazardous Waste

Most of the hazardous waste at RFETS results from routine operations, such as painting, parts cleaning, and equipment maintenance. Building 776/777 currently has a small inventory of hazardous waste in storage and additional small amounts of hazardous waste will be generated during decommissioning activities, resulting in less than 1% of the overall waste generated from the project. Hazardous waste is routinely shipped to off-site commercial facilities for treatment, recycling, and/or disposal.

6.2.2 Low-Level/Low-Level Mixed (LLW/LLM) Wastes

LLW and LLM wastes were generated in Building 776/777 and other RFETS facilities as a result of nuclear weapons component production processes, and they continue to be generated during routine operations in areas where radioactive materials are managed. LLW and LLM waste forms include combustibles, light metals, and liquids. Building 776/777 is currently used to store both LLW and LLM wastes, which will be repackaged, if necessary, and transferred to a treatment and/or storage area in preparation for shipment to Envirocare or the Nevada Test Site (NTS). Additional LLW and LLM waste will be generated during decommissioning. Approximately 55% of the waste produced during decommissioning activities will be LLW and about 18% will be LLM waste.

6.2.3 Transuranic/Transuranic Mixed (TRU/TRM) Wastes

Building 776/777 has an existing inventory of TRU and TRM wastes, which will be repackaged, if necessary, and transferred to a treatment and/or storage area in preparation for shipment to WIPP. Additional TRU/TRM wastes will be generated during decommissioning as GBs and B-boxes used in the fabrication, testing, assembly, coating and disassembly of weapon components and the associated Zone I ventilation systems are dismantled and stripped out. Approximately 17% of the waste generated during decommissioning is expected to be TRU and TRM waste.

6.2.4 Residues/Mixed Residues (RES/REM)

Building 776/777 has an existing inventory of solid and liquid RES and REM, which will be transferred to other RFETS facilities for treatment and/or repackaging in preparation for shipment to WIPP. Approximately 1,700 containers of RES and REM are currently stored in Building 776/777, and about 200 liters of liquid RES/REM remain as holdup in tanks and ancillary equipment. No new RES or REM will be generated during decommissioning.

Liquid REM contained in tanks and ancillary equipment is managed under the terms and conditions of the Mixed Residue Compliance Order on Consent (Ref. 38). The REM tanks in Building 776/777 (Ref. Table 6) are operationally empty. During decommissioning, these tanks will be physically emptied and/or closed according to the Building 776/777 Closure Project Schedule (Ref. Appendix D). During this time, liquids remaining in these tanks may be transferred from tank to tank, drained into four-liter bottles, and stored in gloveboxes for short

periods of time, or drained into portable collection carts and staged in various locations, pending transfer to Building 371, Building 374, or Building 774 for processing, or other appropriate unit for treatment. Prior to the transfer or draining of liquids, a request for authorization to temporarily store REM solutions will be submitted to CDPHE's project manager. The request will identify the tanks, gloveboxes, and portable cart staging locations needed to support liquid removal activities. During liquid transfer and draining activities, appropriate controls will be established to prevent the unauthorized mixing of incompatible wastes, including sampling, if necessary.

REM tank inspection frequencies vary, based upon the closure status and particular hazards associated with individual tank systems. Operationally empty tanks are inspected on a daily basis, and physically empty tanks are inspected quarterly. Other inspection frequencies may be determined appropriate on a case-by-case basis. Prior to implementing any change in inspection frequencies, a request for authorization will be submitted to CDPHE's project manager. Inspection frequencies will be documented in the Building 776/777 Operating Record, along with inspection log sheets for these tanks. Tanks will be inspected to verify the absence of a release and to ensure no new liquid or hazardous waste has been added to the tank system. For physically empty tanks, inspections will also verify physical or administrative controls are in place. In the event additional inventory is discovered in a tank, the responsible building manager will be notified and an action plan will be developed to determine the source of the liquid, or schedule a sampling event or other appropriate action to make a hazardous waste determination. If appropriate, the action plan may include draining the liquid from the system. The DOE, Contractor, or Subcontractor project manager will notify CDPHE's project manager of intended corrective actions.

The Building 776/777 HASP (Ref. 25) contains pre-planning requirements for responses to possible releases from REM tank systems. Pre-planning activities include identification of vital components of the tank system, identification of locations of primary shut-off valves capable of isolating feed to a tank, and a pre-release plan, which specifies the recommended method to drain the tank system (e.g., hot tapping at a low spot, draining into bottles, or draining into another tank system). Building operations personnel are trained to implement the pre-release plan and accompanying shut-off procedures. In the event of an actual release from a REM tank system, the Site's RCRA Contingency Plan will be followed.

The Mixed Residue Compliance Order on Consent (Ref. 38) will terminate as to each of the mixed residue tanks located in Building 776/777 in accordance with paragraph 66(i) of that Order when the LRA approves a minor modification for each tank as provided for in Section 4.5.2 of this DOP.

6.2.5 Polychlorinated Biphenyls

PCBs may be found in equipment oils, fluorescent light ballasts, dried applied paints, and capacitors. Equipment oils will be managed as "PCB liquids," intact ballasts and dried paints containing PCBs will be managed as "PCB bulk product waste," leaking ballasts and other waste containing PCBs as a result of a spill will be managed as "PCB remediation waste," and capacitors containing PCBs will be managed as "PCB items" in accordance with the substantive requirements of 40.CFR 761 (Ref. 39). A small amount of PCB waste is stored in Building

776/777. Very small amounts will be generated during decommissioning (i.e., <1% of decommissioning waste). This waste will be packaged and transferred to a storage area pending shipment to an approved treatment and/or disposal facility.

6.2.6 Asbestos Containing Material

ACM, in the form of pipe and equipment insulation, mastic, and floor and ceiling tiles, was used extensively in Building 776/777. As discussed in Section 4, ACM will be removed during decommissioning, and packaged and disposed of at an approved solid waste disposal facility. ACM contaminated with low levels of radioactivity will be sent to NTS and ACM contaminated with hazardous waste will be sent to Envirocare. Uncontaminated ACM will be disposed of in an approved sanitary landfill. ACM will constitute approximately 50% of the LLW generated during decommissioning.

6.2.7 Sanitary Waste

Sanitary waste is collected for recycle or disposal at an approved off-site landfill. Approximately 10% of the waste generated from decommissioning activities will be categorized as sanitary waste. This waste category may include Be waste that is not considered hazardous waste (i.e., Be that is not Be powder).

6.2.8 Wastewater

Wastewater generated from decommissioning activities will be collected and characterized to determine the appropriate disposal path. Domestic water; non-hazardous, non-radioactive, non-domestic water (i.e., cooling tower water and boiler blowdown); and non-hazardous, non-radioactive internal waste streams generated during decommissioning will be transferred to the Site sewage treatment plant for processing. Hazardous and/or radioactive wastewater that meets the acceptance criteria of the Building 374 treatment facilities will be collected and transferred to Building 374 for treatment. Hazardous and/or radioactive wastewater that does not meet the acceptance criteria of the Site sewage treatment plant or Building 374 treatment facilities will be managed in temporary units authorized by the CDPHE (Ref. Section 6.5). It is estimated that less than 1% of the waste generated during decommissioning will be categorized as wastewater.

6.2.9 Waste Chemicals

Pursuant to the Waste Chemical Compliance Order on Consent (Ref. 40), the waste chemical roundup was completed for the Building B777/776 Cluster in 1998. To minimize personnel exposure to radioactive contamination, Be, and asbestos, certain waste chemicals were identified as "excluded chemicals" in accordance with ¶22 of the Compliance Order and disposition of these chemicals was deferred to deactivation and/or decommissioning. As shown in Table 14, there are currently 16 areas where "excluded chemicals" are or may be stored.

Excluded chemicals and other chemicals used during decommissioning activities will be managed as follows:

- Areas used to store "excluded chemicals" are posted with signs identifying them as "CONSENT ORDER EXCLUDED AREAS" or they are described in a building

Operations Order that includes a requirement to notify a named point of contact prior to entry (Ref. 41).

- No inspections that require entry into a High Contamination Area, Airborne Radioactivity Area, or inoperable glovebox or hood will be performed due to worker radiation exposure concerns and implementation of the ALARA radiation exposure principle. These are the same reasons that these chemicals are considered to be "excluded chemicals" under the Consent Order. Weekly visual observations will be made of each area used to store "excluded chemicals" by looking through windows into the room, glovebox, or hood. For areas where no windows are available, the inspection will be limited to the exterior of the area. Observations will be performed by facility personnel during normal routine facility operations. These visual observations will be non-intrusive in nature. Observations are intended to identify issues such as spills, leaks, swelling, tipped over containers, or other obvious safety or health problems without actual handling of the containers or opening waste chemical storage cabinets. Additionally, the documented weekly visual observations for all "excluded chemicals" will include a review of the Consent Order posting, including verification that the point of contact listed on the posting is current, and a review of whether entry has been or is planned to be made to the area(s). These observations will be documented on a weekly inspection log sheet, a copy of which is contained in Appendix E of this DOP. Any issues identified will be addressed and corrected in accordance with applicable Site procedures (Ref. 40).
- Potentially shock sensitive/explosive waste chemicals will be managed in accordance with the Potentially Shock Sensitive/Explosive Chemical Characterization, Management, and Disposal Plan. (Ref. 42).
- Safety-related documents allowing entry or work in an area containing "excluded chemicals" take into account the risks associated with the waste chemicals that may be stored in the area (Ref. 41).
- Liquid waste chemicals will be characterized in accordance with 6 CCR 1007-3, Part 262.11, and managed as process waste under RCRA/CHWA.
- Solid waste chemicals will be characterized to determine the appropriate ARARs and managed as remediation waste.
- Waste chemicals will be disposed of at approved disposal facilities.

In accordance with its terms, the Waste Chemical Compliance Order is hereby terminated as to each excluded area identified in Table 14.

Table 14. "Excluded Chemical" Areas in Building 776/777

Bldg.	Location	SET#	Reason for Exclusion	Status
776	Rm. 134W, TA & RDA	66	TA & RDA - High Contamination Areas	Chemicals present
776	Rm. 135, FBI GBs	61	Inoperable Gloveboxes	Unknown if chemicals present
776	Rm 146	60	High Contamination Area	Unknown if chemicals present
776	Rm. 146A	60	High Contamination Area	Unknown if chemicals present
776	Rm. 146C	60	High Contamination Area	Unknown if chemicals present
777	Rm. 125, GB550*160	1	Inoperable Glovebox	Chemicals present
777	Rm. 131, GB207-110	6	Inoperable Glovebox	Chemicals present
777	Rm. 430, GB207*758	24	Inoperable Glovebox	Chemicals present
777	Rm. 430, GB399	21	Inoperable Glovebox	Chemicals present
777	Rm. 430, GB451	22	Inoperable Glovebox	Chemicals present
777	Rm. 432B	27	High Contamination Area	Unknown if chemicals present
777	Rm. 452, GB034	34	Inoperable Glovebox	Chemicals present
777	Rm. 452, GB541	35	Inoperable Glovebox	Chemicals present
777	Rm. 452, Downdraft	35	Out of Service (Red Tag)	Unknown if chemicals present
777	Rm. 445, Hood #28	33	High Contamination Area, Out of Service (Red Tag)	Chemicals present
777	Rm. 445, Hood #29	33	High Contamination Area, Out of Service (Red Tag)	Chemicals present

6.2.10 Idle Equipment

Idle equipment containing hazardous materials is managed under the Idle Equipment Compliance Order on Consent (Ref. 43). The substantive requirements for the previously identified idle equipment listed in Table 15, and any idle equipment discovered during deactivation and decommissioning, are as follows:

- Fluids will be drained from idle equipment (e.g., oils, cutting fluids).
- Fluids will be characterized in accordance with 6 CCR 1007-3, Part 262.11.

Table 15. Building 776/777 Idle Equipment with Hazardous Materials Inventory

Room	Idle Equipment Number	SET#	Description	Material	Quantity
2nd Floor	776-0007	48	S-6 Kathbar Unit, EP-6 Economizer Pump Tank (NDT#2758), C-6 Conditioner Pump Tank, Accumulator Tank (NDT#2759), Conditioner Regenerator Tank	Condensate water, lead	Empty
2nd Floor	776-0010	48	Kathbar System, Units A&B	Condensate water, lead	Varies
118G	776-0018	81	FBI Production Unit, Tank (NDT#2476)	Methyl Alcohol	Empty
Outside	776-0045	81	Aboveground Diesel Fuel Tank	Diesel Fuel	Empty
ModLab	777-0003	49	Lapping Center	Beryllium	Empty
131	777-0018	4	Monarch Lathe (GB-605)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0020	4	Machine Lathe (GB-612)	Carbon Tetrachloride	Empty
131	777-0021	5	Machine Lathe (GB-614)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0023	5	Machining Box (GB-616)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0025	5	Harding X-Lathe (GB-620)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0026	5	Storage Box (GB-621)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0027	6	Jig Bore (GB-626)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0028	6	Small Lathe (GB-627)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0029	6	Briquetting Press (GB-630)	Oil, Carbon Tetrachloride & Pu Chips	Empty
131	777-0031	6	Sheffield Sweep Gage & Storage Box (GB-632)	Carbon Tet., Freon TF, Lube Oils, Duct Sealers, Noucure 28 Catalyst or Polygel	Empty
131	777-0033	6	Five-Axis Mill (GB-636)	Oil, Carbon Tetrachloride & Pu	Empty
131, 430, 134A	777-0035	78	Carbon Tetrachloride Supply System	Carbon Tetrachloride	Empty
131, 415, 430, 437, 452	777-0037	78	TCA Supply System (Ultrasonic Cleaning Process)	TCA	Empty
134A	777-0038	11	Excello Lathe (GB-746)	Oil, Carbon Tetrachloride & Pu	Empty
134A	777-0039	11	Pneumo Lathe (GB-747)	Oil, Carbon Tetrachloride & Pu	Empty
134A	777-0040	11	Excello Lathe (GB-748)	Oil, Carbon Tetrachloride & Pu	Empty
134A	777-0041	11	Pneumo Lathe	Oil, Carbon Tetrachloride & Pu	Empty
134A	777-0042	10	Drill Press (GB-752)	Oil, Carbon Tetrachloride & Pu	Empty
430	777-0045	18	Equipment (GB-368)	TCA	Empty
430	777-0046	18	Freon Tank, Old Density Balance	TCA, Freon	Empty

Room	Idle Equipment Number	SET#	Description	Material	Quantity
430	777-0051	21	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-426)	TCA	Empty
430	777-0054	22	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-446)	TCA	Empty
430	777-0056	18	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-465)	TCA	Empty
430	777-0057	24	Zeiss (GB-756)	Nyes Watch Oil, Carbon Tetrachloride	Empty
430	777-0058	24	Sheffield Sweep Gage (GB-758)	Freon TF, Lube Oil, Duct Sealers, Noucure 28 Catalyst or Polygel	Empty
437	777-0065	29	Grit Blasting Unit and Ultrasonic Cleaner (including ancillary piping to first valve) (GB-A2)	TCA, Metals from Blasting	Empty
437	777-0066	29	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-A3)	TCA	Empty
440	777-0067	27	Ultrasonic Cleaner, TRIC Lines	TCA	Empty
447	777-0083	32	X-OMAT Processor Tank (NDT#2470)	Process Developer Replenisher	Empty
447	777-0084	32	X-OMAT Processor Tank (NDT#2471)	Fixer Replenisher	Empty
452	777-0090	35	Ultrasonic Vapor Cleaner (including ancillary piping to first valve) (GB-524)	TCA	Empty

- If the fluid is oil that has not been mixed with a hazardous waste, it will be managed as used oil for recycle, subject to the substantive requirements of 6 CCR 1007-3, Part 279. The substantive requirements include container labeling (i.e., USED OIL), container storage, and release response requirements.
- If the fluid is oil containing >50 ppm PCBs, it will be managed as a PCB liquid under the substantive requirements of 40 CFR 761.
- Drained equipment will be evaluated to determine final disposition as a product (i.e., transfer to Property Utilization & Disposal [PU&D]), scrap metal, or waste.

In accordance with its terms, the Idle Equipment Compliance Order on Consent is hereby terminated as to each piece of idle equipment listed in Table 15.

6.3 Wastes Requiring Further Processing Prior to Off-Site Disposal

Most of the remediation waste generated during decommissioning will be the same or similar to routine waste for which there is a clear disposal path. However, as described below, certain LLM waste and TRU/TRM waste will require further processing prior to off-site shipment and disposal. At this time, the only treatment processes planned for Buildings 776/777 and/or 730 are processes identified in the RCRA Part B Permit and debris treatment, as described in Section 4.5.1.2. In the event additional treatment system(s) must be added to treat remediation waste in Building 776/777 or 730, they will be managed in accordance with Building 776/777 Operations Order OO-776-374, including, if applicable, submittal of a minor modification to this DOP. The LRA will be consulted when determining if a minor modification is necessary for remediation waste treatment, with the exception of generator treatment, as specified in the Operations Order.

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6.3.1 LLM/TRM Wastes Managed Under the Site Treatment Plan

Unless treatment is otherwise specified in Section 6.3, above, the treatment of non-LDR compliant LLM process and remediation waste will be managed under the Site Treatment Plan (STP). Waste added to the STP will be reflected in inventories reported in the STP Annual Progress Report.

The following non-LDR compliant LLM and TRM remediation waste may be generated during decommissioning:

- Oils, liquids, and solids regulated by both TSCA and RCRA,
- Oils regulated by RCRA,
- Bypass and legacy sludges and wet slurries, and
- Waste chemicals including acids, bases, neutrals, and organic solutions.

As treatment paths and associated timetables are identified for these wastes, they will be included in the subsequent versions of the STP Progress Report.

6.3.2 TRU Sludges and TRU/TRM Oils

Certain TRU sludges in tanks and containers, and TRU/TRM oils will require processing to meet the WIPP WAC. The TRU sludges in tanks and containers include filter sludge (IDC 290), laboratory fluoride sludge (IDC 291), incinerator sludge (IDC 292), miscellaneous inorganic sludge (IDC 299), and sludge from the size reduction vault (IDC 340). These sludges will be dried and packaged for shipment to WIPP.

Some TRU/TRM oils that were used as coolants in machining operations in Building 776/777 are contaminated with solvents such as carbon tetrachloride and trichloroethylene. Currently, there is no disposal path for these oils.

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6.4 **Waste Disposal**

Facilities accepting process and remediation waste must meet the requirements of the CERCLA "off-site rule" (Ref. 44). The primary purpose of the "off-site rule" is to clarify and codify the CERCLA requirement to prevent waste generated from remediation activities conducted under a CERCLA action from contributing to present or future environmental problems at off-site waste management facilities. Only facilities meeting EPA's acceptability criteria may be used for off-site management of remediation waste.

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6.5 **Waste Minimization and Recycling**

Waste minimization and recycling will be integrated into the planning and management of the remediation waste generated during decommissioning. Project management will incorporate waste minimization practices into work procedures. Unnecessary generation of sanitary, hazardous, LL/LLM, TRU/TRM, and TSCA waste will be controlled using work techniques that prevent the contamination of areas and equipment; preventing unnecessary packaging, tools, and

equipment from entering radiological contaminated areas; and reusing contaminated tools and equipment when practical.

Standard decontamination operations and processes will be evaluated for waste minimization potential and suitable minimization techniques will be implemented. Property with radiological contamination or property containing hazardous materials may be reused or recycled onsite, offsite by other DOE facilities, or by publicly or privately owned facilities that have proper authorization for receiving it.

Recycling options that may be considered for decommissioning wastes are listed in Table 16. Materials will be recycled based on availability of appropriate recycle technologies, availability of approved facilities, and cost effectiveness. An estimated 3,900 m³ of structural rubble (i.e., concrete) will be generated during decommissioning. Concrete that meets the free-release criteria prescribed by the RFETS DDCP will be recycled as fill material to contour the land when decommissioning activities are completed. Concrete not meeting the free-release criteria will be disposed of at an approved disposal facility.

Table 16. Material Recycling Options

Waste Stream	Recycle Option	Comments
"Clean" scrap metal (not radioactively contaminated and not considered hazardous in accordance with RCRA)	Recycled through approved scrap metal vendors or via contract.	Material must meet receiving facility's WAC.
Radioactively contaminated scrap metal	Recycled by means of metal melt process vendors or contract.	Material must not exceed contamination types and levels identified in the receiving facility's WAC.
Mixed scrap material (radioactively contaminated scrap metal mixed with hazardous constituents)	None	Currently trying to locate and approve facilities that can manage this type of waste.
Clean building rubble/debris	Proposed reuse as backfill; not yet an approved option.	Must meet criteria to be established in RFCA Standard Operating Protocol.
Clean wiring and other electrical components.	Recycled through approved commercial facilities.	Material must not exceed contamination types and levels identified in the receiving facility's WAC.
Clean bulk plastics and glass	Recycled through approved commercial facilities.	Material must not exceed contamination types and levels identified in the receiving facility's WAC.
Used lead acid batteries	Recycled through approved commercial recycling facilities	Material must meet receiving facility's WAC.
Used oil	Recycled through approved commercial fuel blending facilities.	Material must meet receiving facility's WAC.

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7.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

To the maximum extent possible, decommissioning activities must comply with the Applicable or Relevant and Appropriate Requirements (ARARs) under the Comprehensive Response Compensation and Liability Act (CERCLA) (Ref. 45). ARARs have been identified for the complete scope of decommissioning activities, including demolition. The ARARs are listed in Appendix F.

Pursuant to ¶16 and ¶17 of RFCA, the procedural requirements to obtain federal, state, or local permits are waived as long as the substantive requirements that would have been imposed by the permit process are identified. Furthermore, the method used to comply with the substantive requirements must be explained. The permits that will be waived for decommissioning activities in the Building 776/777 Cluster are the RCRA Part B permits for storage, treatment, and temporary units. The methods used to meet the substantive requirements imposed by the permit process are described in Sections 4.5, 6.1 through 6.6, and 7.3 through 7.5.

The following paragraphs describe how the ARARs will be applied to decommissioning activities in the B776/777 Cluster. They are intended to complement other descriptions in the DOP in a manner that satisfies the RFCA permit waiver requirements.

7.1 Air

Closure activities have the potential to generate particulate, radionuclide, fugitive dust, and hazardous air pollutant emissions. Subpart H of 40 CFR 61 contains the requirements for monitoring and reporting activities within DOE facilities that have the potential to emit radionuclides other than radon. Building 776/777 is subject to effluent monitoring of radionuclides due to holdup in ducts and GBs. 5 CCR 1001-3, Regulation No. 1, (Ref. 46) governs opacity and particulate emissions. Regulation No. 1, Section II, addresses opacity and prohibits stack emissions from fuel-fired equipment exceeding 20% opacity. Regulation No. 1, Section III, addresses the control of particulate emissions. Fugitive particulate emissions will be generated from demolition and transportation activities. Control methods for fugitive particulate emissions should be practical, economically reasonable and technologically feasible. During demolition activities, dust minimization techniques, such as water sprays, may be used to minimize suspension of particulates. In addition, demolition operations will not be conducted during periods of high wind. The substantive requirements will be incorporated into a control plan that defines the level of air monitoring and particulate control for the project.

5 CCR 1001-3, Regulation No. 3, (Ref. 47), provides CDPHE with the authority to authority inventory emissions. Regulation No. 3, Part A, describes Air Pollutant Emission Notice (APEN) requirements. If applicable, RFETS will prepare an APEN to facilitate the CDPHE inventory process.

7.2 Solid Waste

Non-radioactive, non-hazardous wastes will be managed in compliance with the substantive requirements of CDPHE regulations pertaining to solid waste management and disposal (6 CCR 1007-2), (Ref. 48). Hazardous and mixed wastes designated as "process waste" will be managed in accordance

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with the substantive and administrative requirements of RCRA, CHWA, CHWR, and the Site's RCRA Part B Permit. Hazardous and mixed wastes designated as "remediation waste" will be managed in accordance with the substantive requirements of RCRA, CHWA, and the CHWR, which are listed in Appendix F of this DOP and included in Building 776/777 Operations Order OO-776-374, Management Requirements for Remediation Waste

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7.4 Wastewater

Wastewater generated from decommissioning activities will be collected and characterized to determine the appropriate disposal path. Domestic water; non-hazardous, non-radioactive, non-domestic water (i.e., cooling tower water and boiler blowdown); and non-hazardous, non-radioactive internal waste streams generated during decommissioning will be transferred to the Site sewage treatment plant for processing. Hazardous and/or radioactive wastewater that meets the acceptance criteria of the Building 374 treatment facilities will be collected and transferred to Building 374 for treatment. Hazardous and/or radioactive wastewater that does not meet the acceptance criteria of the Site sewage treatment plant or Building 374 treatment facilities will be managed in temporary units authorized by CDPHE (see Section 6.5).

7.5 Asbestos Containing Material

ACM will be managed in accordance with 5 CCR 1001-10, Regulation 8. Specifically, Section III, C.7.6, provides maximum allowable asbestos levels and sections C.8.2(b), (d) and (f) provide requirements for handling asbestos waste materials.

7.6 Polychlorinated Biphenyls

PCBs will be managed in accordance with the substantive requirements of 40 CFR Part 761, Disposal of Polychlorinated Biphenyls. Radiologically contaminated PCBs will be managed in conformance with applicable Federal Facilities Compliance Agreement (FFCA) requirements until a final storage facility is approved.

7.7 Migratory Birds

Closure activities may impact migratory birds protected by the Migratory Bird Treaty Act (Ref. 49), and the Fish and Wildlife Conservation Act (Ref. 50). Due to the variations in potential impacts depending upon the season and the nesting schedules for migratory birds, the substantive requirements of these federal statutes, as they apply to federal facilities, will be evaluated prior to conducting the actions associated with decommissioning. The substantive requirements identified during the evaluation will be implemented in accordance with the statutes and associated regulations.

8.0 ENVIRONMENTAL CONSEQUENCES OF ACTION

The following paragraphs summarize the results of the environmental impact analysis, which was performed for the full scope of the Building 776/777 Closure Project. The environmental consequences of the entire project are considered from the beginning to ensure the cumulative impacts resulting from each stage of the project are acceptable. This analysis will be revised, as necessary, in the demolition modification to this DOP, which will address the disposition of building slabs.

8.1 Environmental Impact Issues

As described in earlier sections, Buildings 776/777 and 730 are located entirely within the Protected Area of the Site's Industrial Area (Ref. Figure 3). Initial investigations show that many interior surfaces, process drains, piping, GBs, filters, sumps, and other equipment are radioactively contaminated.

The proposed closure activities for Building 776/777 include asbestos abatement; decontamination of interior surfaces and equipment by vacuuming and wiping; disconnection of electrical power; draining of piping systems and equipment; removal of GBs and other equipment; further decontamination by wiping, washing, scabbling, and other methods; and dismantling and demolition of the buildings. Proposed closure activities for Building 730 include decontamination and removal of equipment. Given the existing environment and industrial setting, environmental impact issues associated with the Building 776/777 Closure Project are relatively limited. The proposed activities should not result in discernible long-term adverse effects to biological resources, including vegetation, wetlands, wildlife habitat, and state and federal sensitive (e.g., threatened and endangered) species populations or habitat. The buildings to be closed are not located in a floodplain and the proposed activities will not affect or be affected by any floodplain. No wild and scenic rivers, prime agricultural soils, parks, or conservation areas will be affected. The proposed activities will provide employment for a limited number of people, most from the current Site work force. Thus, the activities are unlikely to result in adverse socioeconomic effects. The removal of the buildings will not be noticeable off site and will not result in major visual changes.

Therefore, the discussion of impact issues focuses on other areas of potential environmental impacts in addition to potential worker and public impacts. These impacts are as follows:

- Mobilization of radioactive and other contaminants into soil, air, surface water, or ground water;
- The H&S of workers who may be exposed to radioactive, toxic or hazardous materials (including lead, asbestos, and PCBs), and the H&S of the public, resulting from normal closure activities as well as accidents;
- The physical removal of Building 776/777 as an historic structure eligible for the National Register of Historic Places and a secondary contributor to a potential Historic District comprised of Cold War Era facilities at Rocky Flats; and
- This project's contribution to site-wide cumulative impacts.

8.2 Relative Impacts

As summarized in Table 17 and discussed in this section and in Section 3, the different alternatives have relative impacts on the Site and the surrounding area. Information presented in Table 17 is based on the Cumulative Impact Document (CID) coverage of relative impacts on environmental consequences and DOE policy to the extent practicable. Supporting documentation for this table can be found in Section 3.

8.3 Geology and Soils

Decommissioning activities in the Building 776/777 Closure Project will disturb minor land acreage, most of which has been previously disturbed. There will be a short-term increase in soil erosion and siltation surrounding building drainage pathways. Small, temporary losses of soil productivity may occur from construction activities and vehicle movement. Volatile organic compounds and radionuclide contamination already exist in the Building 776/777 footprint and adjacent areas. Additional contamination of soil from closure activities is not expected because building structures will be decontaminated or contamination will be fixed before the structures are demolished.

8.4 Air Quality

Potential impacts to air quality resulting from the closure of Buildings 776/777 and 730 include:

- Asbestos,
- Be and radionuclide emissions resulting from the decontamination and removal of equipment and building material,
- Hazardous air pollutants from the removal of waste oil collection and organic solvent tanks, and
- Fugitive dust emissions resulting from transportation activities associated with the closure and demolition activities.

Air emissions from these activities will be controlled and monitored in accordance with the Site H&S Program and air quality ARARs presented in Section 7. Controls to be used for individual decommissioning projects will be selected during the planning and engineering phase of the IWCP process and described in the associated IWCP work packages.

Asbestos is present in several areas, primarily in the form of pipe insulation. This material will be removed in accordance with applicable state and federal regulations. There is minimal risk of an asbestos release to the air if the removal, transportation, and final disposition is in accordance with applicable regulations.

Table 17. Comparison Summary of NEPA Relative Impacts

Consequences	Decommissioning	No Action With Safe Shutdown	Reuse
1. Human Health <i>Consequences include radiological and non-radiological safety for workers and public</i> 1.1 Radiological for workers and public 1.2 Non radiological for workers and public	<p>Annual exposures are expected to decline once the facility is decontaminated. Specific information is contained in section 8.5.</p> <p>Hazards will increase until closure is completed, then fall below any substantial hazard level. Specific information is contained in section 8.6.</p>	<p>As the facility continues to age, the potential release of contamination within the building increases over time due to the levels 279 production GBs, connecting stations, and conveyors.</p> <p>Hazards will continue to exist and as the facility ages additional hazards will increase. Be, lead, heavy metals, asbestos, and chemicals exist that would be extremely difficult to stabilize.</p>	<p>Significant radiological contamination exists from the 1969 fire, 279 production GBs, connecting stations, and conveyors.</p> <p>Hazards will continue to exist and as the facility ages additional hazards will increase. Be, lead, heavy metals, asbestos, and chemicals exist that would be extremely difficult to stabilize.</p>
2. Worker Safety <i>Consequences include H&S issues for the worker and the environment</i>	<p>Hazards will increase until closure is completed, then fall below any substantial hazard level.</p>	<p>Identified hazards will continue to exist. Breaches to equipment from age will cause release of contaminants subjecting the worker to additional hazards.</p>	<p>Identified hazards will continue to exist. Breaches to equipment from age will cause release of contaminants subjecting the worker to additional hazards.</p>
3. Environment <i>Consequences include environmental, socioeconomic, and cumulative impacts</i>	<p>These consequences will decrease once remediation is complete. The proposed activities should not result in discernible long term adverse effects to biological resources, including vegetation, wetlands, wildlife habitat, and state and federal sensitive (e.g., threatened and endangered) species populations or habitat. Specific information is outlined in sections 8.1, 8.2, 8.3, 8.7, 8.8, 8.10, 8.11, 8.12, 8.13.</p>	<p>Identified hazards will continue to exist and as the facility ages additional hazards will increase.</p>	<p>Identified hazards will continue to exist. Breaches to equipment from age will cause release of contaminants subjecting the worker and the environment to additional hazards.</p>

Decontamination, size reduction, removal, and ultimate disposal of equipment and materials in Buildings 776/777 and 730 have the potential to release radionuclides and residual chemical vapors to the air. Decontamination and size reduction activities take place within containment (either GB, B-box, or hood) equipped with HEPA filters. In addition, the building room exhaust is equipped with HEPA filters.

Rad-National Emission Standards for Hazardous Air Pollutants (NESHAP) [40 CFR 61, Subpart H, (Ref. 51)] requires that air emissions be monitored from any source having estimated uncontrolled radioactive air emissions that exceed 0.1 mrem/ year effective dose equivalent to any member of the public. Many of the decommissioning activities have a potential for uncontrolled radionuclide air emissions that exceed the 0.1 mrem/year monitoring threshold. As necessary, monitoring will be performed utilizing the existing effluent stack monitors, the existing Radioactive Ambient Air Monitoring Program network, and/ or project-specific air monitoring methods described in the Site Integrated Monitoring Plan. Building ventilation will be modified to utilize existing monitored plenum systems to satisfy monitoring requirements, if necessary.

8.5 Water Quality

The Building 776/777 Closure Project activities are not expected to change storm water runoff, surface water flow characteristics, or ground water. This is because no buildings will be removed below ground level and for reasons discussed below.

Potential impacts to storm water runoff resulting from closure activities include the release of liquids via drains or doors that have direct access to the outdoor environment. It is unlikely this will happen since the IWCP/ISM process discussed in Section 5 will be used. Decommissioning activities that may lead to the release of liquids will be identified to ensure drains and/or doorways are appropriately blocked.

Techniques under consideration for decontamination of the Building 776/777 equipment include the use of water or steam to remove radiological contamination and loose debris. This decontamination technique would be used while the building shell and utility support systems are still intact. While this technique is effective in removing radiological contamination, it may also generate large volumes of potentially contaminated water and may even contribute to the spread of radiological contamination inside the building. Contaminated water will be sampled before release or transfer to Building 374. Ground water should not be affected since no work will be performed outside the facility or below ground level.

Because portions of ancillary structures off ground level (e.g., cargo containers) will be removed, some new bare ground is expected to be exposed to wind and water erosion, and surface water flow characteristics may be impacted. If appropriate, silt fencing or a similar protective device may be installed to prevent or minimize the possibility of water-borne soil leaving the immediate area and entering drainage ways.

8.6 Human Health Impacts

Because the nature of closure work is to remove or fix contamination in-place, closure activities have the potential to expose involved workers, non-involved workers, and the public to radiological and other chemical contamination. Disturbance of contaminants or hazardous materials increases the

chance of the contaminants or materials to be dislodged, become airborne, and be inhaled by or deposited on humans.

8.7 Radiological Impacts to Workers and the Public

Radiological dose calculations for the public and workers are based on information in the Rocky Flats CID (Ref. 52). The CID radiological dose calculations are based on a 100,000 square foot generic Pu processing facility representative of Pu processing facilities at RFETS. In comparison to the generic facility, Building 776/777 is approximately 224, 600 ft². As a result, the dose rates to the workers and public in the CID have been proportionately scaled up to estimate worker and public health impacts for Building 776/777. No other adjustments are needed because the assumptions used for the CID calculations were similar to conditions for Building 776/777 closure (i.e., work crew sizes, activities, and schedules are similar in both cases).

For involved workers, closure activities in Building 776/777 are estimated to result in a total dose of 132 person radiation equivalent man (rem). This exposure is expected to result in less than one (0.05) latent cancer fatalities, assuming the same worker group of 24 people conduct both deactivation and decommissioning activities. This is a conservative estimate since work crews will be assigned so individual workers will be protected in accordance with the Site's 750 mrem per year individual dose administrative control level. Doses to co-located workers from closure operations in Building 776/777 alone have not been evaluated. However, the annual radiological exposure of a maximally exposed co-located (unprotected) worker as a result of site-wide closure activities is estimated at 5.4 mrem (a mrem is 1/1000 of a rem). The corresponding risk of a latent cancer fatality to this worker is two in 1,000,000 (CID, Section 5.8.1 [Ref. 52]).

Annual dose to the maximally exposed off-site individual from Site closure activities is estimated at 0.23 mrem, with a corresponding excess latent cancer fatality of 1 in 10,000,000. The annual dose to the public as a result of all activities in the RFETS Closure Project at the peak time of exposure (1997 - 2006), is expected to be a total of 23 rem for the 2.7 million people projected to be living within 50 miles of the Site in 2006. This annual dose of 23 person-rem is expected to result in less than one (0.01) latent cancer fatality in the entire Denver area population. Estimated annual dose to the maximally exposed off-site individual is well below the applicable standard of 10 mrem/year (CID, Section 5.8.2, [Ref. 52]).

Estimated doses to the maximally exposed offsite individual from the Building 776/777 Closure Project are expected to be a small fraction of the estimates for site-wide activities, as described above. For comparison purposes, the DOE annual limit for occupational exposure as a result of all activities and through all exposure pathways is 5,000 mrem (5 rem) per person. Natural background radiation in the Denver area results in an annual exposure of approximately 350 mrem per person. Exposures to workers and the public will be controlled and monitored in accordance with the RFETS Radiation Safety Program.

8.8 Non-Radiological Health Impacts

Non-radiological health effects from exposure to chemicals are measured by a hazard index. A hazard index greater than one is considered to be a basis for concern, and the greater the index is above one, the greater the level of concern.

For the full suite of Site closure activities, including closure of all buildings, a hazard index of 1.2 has been calculated for a co-located worker who is chronically exposed during working hours to all chemicals of concern simultaneously (as described in the CID, (Ref. 52)) over the entire period of Site closure. The corresponding cancer risk is five in 100,000 (CID Section 5.8.3, [Ref. 52]). For the full suite of Site closure activities, including closure of all buildings, a hazard index of 1.5 has been calculated for a member of the public who is chronically exposed every day for 70 years to all chemicals of concern (as described in the CID) simultaneously (a highly unlikely event). A more reasonable scenario of exposure to a single chemical showed hazard indices of well below one for each potentially released chemical. Analysis of potentially carcinogenic air pollutants indicates a cancer risk of three in 10,000,000 for the maximally exposed off-site individual (CID Section 5.8.4, [Ref. 52]).

Estimated non-radiological impacts from the Building 776/777 Closure Project are expected to be a fraction of those estimated for site-wide activities, as described above. Exposures to workers and the public will be controlled and monitored in accordance with the RFETS toxic/hazardous materials and chemical safety program.

8.9 Occupational Hazards

In addition to exposure to radiological and chemical hazards, workers at the Site are exposed to a variety of industrial hazards such as heavy machinery, repetitive motion tasks, and physical agents such as heat and cold. Using a general industry rate for construction to estimate injury and illness cases, Site closure activities are estimated to result in 584 cases of injury and illness during the peak activity period (1997 through 2006), (CID, Section 5.8.3, [Ref. 52]). The portion of these cases estimated to result from the Building 776/777 closure alone would be less than the total Site figure.

The general industry rate of injury and illness is considerably higher than the historic incidence rate for the Site. Occupational hazards will be controlled, mitigated, and monitored in accordance with the RFETS occupational health and industrial safety programs.

8.10 Plants and Animals

Because the Building 776/777 Closure Project is located in the previously disturbed Industrial Area, impacts to plants and animals are expected to be minimal. Possible minor impacts to other vegetative areas may result as fugitive dust may distribute undesirable materials among existing plant species. Additional impacts may occur to vegetation due to increased traffic involving closure equipment. Increased traffic, both vehicular and pedestrian, could result in some vegetation disturbance.

Some mammals such as rats, mice, rabbits and raccoons are known to be residents of or visitors to the Industrial Area. These mammals will be displaced, and some mortality will occur as a result of closure activities. Bird nests attached to buildings planned for demolition will be destroyed. Due to

the proximity Building 776/777 to the segment of Walnut Creek drainage located in the Protected Area, this action may generate dust and sediment runoff that could reach the creek. The activities may therefore require consultation with the U.S. Fish and Wildlife Service for downstream impacts to the Preble's meadow jumping mouse habitat. The Preble's meadow jumping mouse is a federally-listed threatened species under the Endangered Species Act (Ref. 53). Mitigation measures will be determined in consultation with the U.S. Fish and Wildlife Service.

8.11 Waste Management

Environmental impact issues associated with waste management are related to human health issues, storage capacities, and transportation. In general, waste generated from the Building 776/777 Closure Project will include contaminated and uncontaminated equipment, tools, electrical conduit systems, piping systems, GBs, and facility structural materials.

Items not radiologically contaminated or those decontaminated to a free-release condition may be transferred for use at a different location within RFETS, for use at a different DOE facility, or sent to the PU&D organization for appropriate handling. Items that cannot be decontaminated to a free-release condition will be managed as waste, or reused onsite or at another DOE facility in accordance with applicable release criteria. On-site storage of mixed waste will be in accordance with approved Site procedures until the material can be shipped for off-site disposal. Waste will be characterized, stored, and disposed of in accordance with the requirements of approved Site waste management procedures that meets federal and state regulations.

Waste minimization will be practiced in the planning and management of the Building 776/777 Closure Project waste. Elimination and reduction of waste generated as a result of closure is a high priority. Standard decontamination operations and processes will be evaluated for waste minimization potential and suitable minimization techniques will be implemented.

8.12 Historic Resources

The impacts related to historical resources are the loss of Building 776/777 as an historic structure eligible for the National Register of Historic Places, and a secondary contributor to a potential Historic District comprised of Cold War Era facilities.

Sixty-four buildings within the Site's Industrial Area, including Building 776/777, have been identified as important to the historic role of the Site in manufacturing nuclear weapons components during the Cold War. Building 776/777 was originally constructed in 1951, with a number of additions between 1962 and 1974. While this building, like the others, is less than 50 years old, it is considered historically significant as an essential component of the weapons production activities at Rocky Flats.

Negotiations have been completed between DOE and the State Historic Preservation Officer (SHPO) concerning the appropriate mitigation measures that apply to these buildings. As a result, Building 776/777 will be subject only to documentation requirements (collection or creation of construction drawings and photographs), rather than preservation. However, the building may not be modified or damaged before completion of documentation, per standards accepted by the SHPO.

8.13 Noise

Closure and demolition of Buildings 776/777 and 730 are not expected to significantly increase noise levels in the Rocky Flats area. Most activities will take place inside the associated buildings so noise levels, if elevated over ambient levels, will be confined to the Building 776/777 Closure Project structures in which they are generated. Other less common activities, such as scabbling, abrasive blasting, and demolition by backhoe, hydraulic cutters, or other devices are expected to generate noise levels higher than ambient noise levels. Workers involved in these activities will use appropriate hearing protection devices. Outdoor activities will take place at a distance from unprotected workers and the public, and are not expected to increase noise levels to an unsafe level.

8.14 Socioeconomic Effects

Potential impacts from the Building 776/777 Closure Project will contribute to a net overall loss of employment in the long run. The current on-site work force in the building will either be drawn into the closure activities for the building (and potentially for the entire Site) or voluntarily terminate employment. In the short run, closure activities may increase the employment level due to increased needs. Additionally, a modest increase of purchases (raw materials, etc.) may result.

Under the worse case scenario, if the entire work force currently housed in the Building 776/777 Cluster opts to terminate employment, the overall impact will not have a significant adverse effect on the Denver Metropolitan area, including Boulder and Jefferson Counties, where the majority of the work force resides. The net effects of demolishing Buildings 776/777 and 730 are expected to be minimal.

8.15 Cumulative Effects

Impacts associated with the Building 776/777 Closure Project will contribute incrementally to potential site-wide cumulative impacts associated with the overall RFETS Closure Project.

Cumulative impacts are impacts to the environment resulting from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions. Significant impacts could result from several smaller actions that, by themselves, may not have significant impacts. The cumulative effects of Site cleanup efforts are described in the CID (Ref. 52). That document describes the short- and long-term effects from the overall Site clean up mission.

Cumulative impacts of the Building 776/777 Closure Project relative to the Site closure will include:

- Decommissioning activities associated with the Building 776/777 Closure Project will generate sanitary, hazardous, TSCA, LLW, LLM, TRU, and TRM wastes. Existing on-site interim storage for radioactive waste is limited and eventually, as site-wide closure progresses, additional storage capacity may be needed. The same is true for sanitary waste.
- Increased traffic volume, resulting from off-site shipments of Pu components and waste, may cause congestion problems, an increase in traffic accidents resulting in fatalities, and an increase in potential latent cancer illnesses related to motor vehicle emissions and fugitive dust.
- Adverse socioeconomic impacts from reductions in the Site's workforce will not substantially affect the surrounding region due to additional growth projected in the area.

Some cumulative impacts may ultimately be beneficial to the environment. Remediation is currently scheduled to follow demolition of buildings in the Cluster, which may result in the restoration of some of the Site to its original, natural condition.

- Removing human occupation, structures and paved surfaces and re-establishing native grasses and other vegetation could restore native plant communities and increase wildlife habitat, including threatened and endangered species.
- Cleaning up contamination will reduce health risks to human and animal populations.
- High profile structures that have dominated the Site and the local skyline for 45 years will be eliminated. The landscape will take on a less industrial and more open, rural appearance, similar to the rangeland that characterized the area before buildings on the Site were constructed.

8.16 Mitigation Measures

Mitigation measures are prescribed to reduce or avoid potentially adverse effects associated with a proposed activity. For the decontamination and closure of the Building 776/777 Cluster, mitigation measures will be considered in the areas of human health, worker safety, release of emissions and mobilization of contaminants, and cultural resources.

Closure will be conducted in accordance with applicable worker and public H&S programs; activities will be managed so that emissions and discharges are within applicable regulatory limits. Closure will take place within containment of existing buildings or temporarily constructed facilities (e.g., tents) with functioning drainage, air filtration, and other safety and environmental protection systems commensurate with risks inherent in the activities being conducted.

Precautions will be taken to ensure compliance with the Migratory Bird Treaty Act (Ref. 49), which prohibits destruction of birds or their nests, active or inactive, without a permit. Building demolition or dismantlement activities that would destroy nests will not be conducted during the nesting season, or measures will be taken to avoid affecting nesting birds prior to the nesting season. Activities that may effect nesting birds will be coordinated with Site ecologists. No closure activities will take place in or near the habitat of known threatened or endangered species.

No modification or damage to buildings determined to be eligible for the National Register of Historic Places will occur prior to completion of the documentation requirements in accordance with the standards set forth in the Memorandum of Agreement with the SHPO.

8.17 Unavoidable Adverse Effects

If conducted as proposed, the Building 776/777 Closure Project will have the following unavoidable adverse effects:

- Physical removal of an historic structure that is eligible for the National Register of Historic Places and a secondary contributor to a potential Historic District comprised of Cold War Era facilities;
- Short-term increases in air emissions and water discharges;

- Radiation and chemical exposures to workers, co-located workers, and the public, resulting in a small, but increased risk of adverse health effects;
- Possible industrial accidents, resulting in injury and illness; and
- Increased noise levels for the duration of closure activities.

8.18 Short-Term Uses and Long-Term Productivity

Unlike most projects that commit a site to a particular use for a period of time, the effect of closure will be to undo past commitments concerning use of the Site and open up a new and broad range of potential future uses. Closure does not commit the Site to a particular land use; rather, closure of the Building 776/777 Cluster will be one step in the process of ending one use and opening consideration for a variety of other possible future short- and long-term uses.

8.19 Irreversible and Irretrievable Commitments of Resources

Funds, labor, equipment, fuel, tools, PPE, waste storage drums, and similar items are resources that will be irretrievably committed to the Building 776/777 Closure Project.

9.0 QUALITY ASSURANCE

9.1 Background

The work performed under this DOP shall be accomplished in accordance with regulatory, EPA, and contractual QA requirements. The regulatory requirements are 10 CFR 830.120, Quality Assurance Requirements (the QA rule). The EPA requirement is American National Standards Institute (ANSI)/ASQC-E4, (Ref. 54). The contractual requirement is DOE Order 5700.6C, Quality Assurance. The technical requirements are embodied in ten criteria that are virtually the same in 10 CFR 830.120 and DOE Order 5700.6C. The difference between the two documents is scope and enforceability. 10 CFR 830.120 applies to activities that have the potential to cause radiological harm and is enforceable through fines and penalties; DOE Order 5700.6C applies to non-nuclear activities and is a contractual obligation. ANSI/ASQC-E4 differs from the 10 CFR 830.120 and DOE Order 5700.6C in that it has more detailed requirements for data usability and assessment and control of computer hardware and software.

The application of these requirements to a facility that is undergoing project closure is graded and will diminish as the facility moves closer to the final project endpoint. The purpose of this section is to provide strategic principles and guidance on the application of QA requirements to a facility undergoing project closure where the safety significance of activities and the magnitude of risk associated with the facility are decreasing over time.

10 CFR 830.120, DOE Order 5700.6C and ANSI/ASQC-E4 are implemented through the QAP and the QAP Description (Ref. 55). The QAP Description defines the RFETS requirements that are employed to deliver consistent decommissioning services.

9.2 Quality Criteria

What follows is a discussion of each of the 10 criteria of the QA rule (10 CFR 830.120), DOE Order 5700.6C, and applicable elements of ANSI/ASQC-E4. A comment section is included, articulating guiding principles and examples for reducing the formality and intensity of application of quality requirements toward the completion of the Building 776/777 Closure Project.

<u>Quality Criterion</u>	<u>Document/Procedure that Implements/Satisfies the Criterion</u>
1) Quality Programs	K-H QAP Price Anderson Amendments Act Program (1-MAN-022-PAAAPROG) - Management Control System (F&A-MCS-001) Preparation of QA Program Plans (1-C40-QAP-02.01) RMRS QAP Policy RMRS QAP Description (RMRS-QAPD-001)

Comments: A written QA program must be established, implemented and maintained to describe the organization, roles, and responsibilities of those managing, performing and assessing the adequacy of work. The QA rule and 5700.6C allow contractors latitude in grading the appropriate quality levels of control based on factors such as the form and magnitude of the (remaining) hazard, the life cycle stage of the facility, and the mission of the facility. As the scope and risk decrease during the closure process, the level of rigor and intensity of quality requirements may be adjusted and implemented via revisions to the applicable QA Program documents and implementing procedures.

2) Personnel Training and Qualification	K-H Training User Manual K-H Training Implementation Manual RMRS Training Manual (RF/RMRS 97-040) Instruction for Tracking/Scheduling Training and Qualifications and Retention of Records for Training (RMRS INSTR.003) Development, Use and Control of List of Qualified Individuals (RMRS INSTR.004) Identifying Training and Qualification Requirements (RMRS INSTR.005) Development and Use of Qualification Documents (RMRS INSTR.006) Development and Use of Training Implementation Plan (RMRS INSTR.007) Design/Development of Training Materials (RMRS INSTR.011) Operating Organization Requirements for Continuing Training Programs (RMRS INSTR.013) RMRS Qualification and Certification of QA Personnel (RMRS-QA-02.01)
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Comments: Personnel performing work shall be trained and qualified based on project-specific requirements prior to the initiation of the Building 776/777 Closure Project. The K-H Training Users Manual and Training Users Matrix provide guidelines for contractors to implement training instructions for RFETS facilities. The documents listed above specify requirements for

qualification or certification of personnel performing specialized activities. The referenced programs are used to identify the positions that require formal qualification and certification (and continuing training). Examples of specific training classes identified for decommissioning workers are as follows: nuclear criticality safety and support, hazardous waste operations, waste generator, Be operations, and electrical safety. As job requirements change, the need for retraining to ensure continued job proficiency will be evaluated.

3) Quality Improvement

Site Corrective Action Requirements Manual
(1-MAN-012-SCARM)
Site Integrated Oversight Manual
(1-MAN-013-SIOM)
Site Lessons Learned/Generic Implications
Requirements Manual (1-S27-ADM-16.18)
Stop Work Action (1-V10-ADM-15.02)
Occurrence Reporting Process
(1-D97-ADM-16.01)
Performance Indication and Trend Analysis
(1-E93-ADM-16.18)
Control of Non-conforming Items
(1-A65-ADM-15.01)
Control of Waste Non-conformances
(2-U76-WC-4030)
RMRS Corrective Action (RMRS-QA-.03.01)
RMRS Conduct of Surveillance
(RMRS-QA-10.02)

Comments: The processes used to detect and prevent problems and to ensure quality improvement are referenced here. As decommissioning activities are initiated, a graded approach will be used to determine the significance of issues and to determine which corrective actions will be managed in the Plant Action Tracking System. As systems, including VSS, components, and structures are declared out-of-service, the use of the Non-conformance Report process will be greatly reduced.

4) Documents and Records

Site Documents Requirements Manuals
RMRS Document Control Program
(RMRS RM-06.01)
Correspondence Control Program
(1-L43-IMS-001)
Records management Guidance for Records
(1-V41-RM-001)
RMRS Records Identification, Generation and
Transmittal (RMRS RM-06.02)
RMRS Records Receipt, Processing, Retrieval
and Disposition (RMRS RM-06.03)
Administrative Record Document
Identification and Transmittal
(RMRS RM-06.04)

Comments: Documents that are used to describe how decommissioning activities are to be accomplished, documents that produce quality affecting data, and documents that support a RFCA (Ref 2) decision or deliverable will be Controlled Documents. A diminishing level of control will be implemented for documentation as the 776/777 Closure Project progresses. A records management program has been established to ensure that records are specified, prepared, reviewed, approved, authenticated, legible, transferred, collected, maintained, stored, retained, and indexed for accountability and retrievability (see Appendix C for list of generic Administrative Record, project and QA records).

5) Work Processes

Configuration Change Control Program
IWCP Manual
COOP Manual
(Man-066-COOP)
Site Documents Requirements Manual
(1-MAN-013-SDRM)
ISM Manual (1-MAN-016-ISM)
Radiological Control Manual
Radiological Safety Practices Manual
HSP Manual
Radiation Protection Program Procedure
(1-Q50-RPP-0001)
Preparation and Control of RMRS Documents
(RMRS-QA-05.01)
QA Review of RMRS Documents (RMRS -
QA-05.02)
RMRS QAP Description (App. 3)

Comments: Closure activities are performed according to approved planning and technical documents and according to the prescribed sequence defined during planning when appropriate and stated. The number of procedures/instructions for activities associated with the Building 776/777 Closure Project will be commensurate with the level of activity, complexity, risk and lifecycle stage of the closure. Additional references are included in this section for the use of computer hardware and software and assessment of data usability as prescribed in ANSI/ASQC-E4.

6) Design

Configuration Change Control Program
Manual
COEM (Design Process Requirements-
COEM-DES-210)
Computer Software Management Manual
(1-MAN-004-CSMM)
Operation Review Committee Requirements
(1-52000-ADM-02.01)
RMRS USQD Process (1-C11-NSM-04.05)

Comments: Sufficient engineering design control must be maintained to ensure that personnel can safely enter and work in the facility and that safety-significant systems, components, and structures (including engineered safety features) will function as intended. The general level of engineering verification and validation associated with engineering activities will be significantly reduced as the Project comes to closure. Peer reviews and one-over-one management reviews will be the norm.

7) Procurement

Procurement System Manual
Acquisition Procedure for Requisitioning
Commodities and Services (1-W36-APR-111)
COEM (Engineering Standards for
Procurement -COEM-DES-273)
RMRS QA review of RMRS Documents
(RMRS -QA-05.02)
RMRS Evaluation of Suppliers
(RMRS-QA-07.01)

Comments: The procurement of items and services for the Building 776/777 Closure Project will be planned and controlled to ensure that the quality of items and services is known, documented and meets the technical requirements and acceptance criteria of the Project. Towards the end of the Building 776/777 Closure Project, most procurements should be commercial buys that will not require suppliers to have special quality programs, meet acceptance criteria, or to provide documentation beyond that which comes with the item as a matter of course.

8) Inspection and Acceptance Testing

Inspection and Acceptance Test Process
(1-PRO-072-001)
COEM (Design Process Requirements –
COEM-DES-210)
Control of Measuring and Test Equipment
(1-I97-ADM-12.01)
Computer Software Management Manual
(1-MAN-004-CSMM)
Waste Inspection Procedures Manual
RMRS QAP Manual
RMRS QAP Description (App. 3)

Comments: Instruments used to demonstrate compliance with the facility's AB, (e.g., LCO surveillances), instruments necessary to operate safety systems, and instruments necessary to demonstrate acceptance criteria for closure activities will be calibrated in conformance with established schedules and acceptance criteria. The level of acceptance testing will be reduced as the level of engineering verification and validation associated with engineering activities diminishes. Waste inspection activities will be based on the requirements in the disposal facility WAC. Additional references are included in this section for the use of computer hardware and software and assessment of data usability as prescribed in ANSI/ASQC-E4.

9) Management Assessment

Site Integrated Oversight Manual
(1-MAN-013-SIOM)
RMRS Management Assessments
(RMRS-QA-09.01)
RMRS Corrective Action (RMRS-QA-03.01)

Comments: As the Building 776/777 Closure Project progresses, most of the assessments in the facility will be management assessments (versus independent assessments) and the level of assessment activity will be reduced. Management assessments will be performed to establish whether the prevailing management structure, policies, practices, procedures and data are adequate for ensuring that the quality of the results based on the necessary risk and performance indicators are obtained. Management assessment programs have been established for the following areas: management systems, QA, configuration management, training and qualification, EP, COOP, maintenance, RP, fire protection, waste management/environmental protection, nuclear safety, criticality safety, hazardous material protection, industrial safety, work control, procedures and occurrence reporting. The last large-scale assessment activity should be a Pre-Demolition Survey review, and final Project closeout documentation to confirm that the required closure steps have been completed.

10) Independent Assessment

Site Integrated Oversight Manual
(1-MAN-013-SIOM)

Independent Assessment Program
Planning and Scheduling Independent
Assessments

Readiness Determination Manual
(1-MAN-040-RDM)

Conduct of Independent Assessment Activities

RMRS Qualification and Certification of QA
Personnel

RMRS Conduct of Surveillances
(RMRS-QA-10.02)

RMRS Corrective Action (RMRS-QA-.3.01)

Comments: As the Building 776/777 Closure Project approaches completion, the level and intensity of independent assessments will diminish. Assessments will include evaluations to determine and verify whether technical requirements, not just procedural compliance are being implemented. At some point near closure no further independent assessments will be scheduled or performed; limited- scope facility-specific surveillances performed by QA representatives assigned to the facility will continue until shortly before final closure.

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10.0 IMPLEMENTATION SCHEDULE

PBS #19 contains a P3 schedule and BOE for completion of the Building 776/777 Closure Project. The current schedule is provided in Appendix D. The first SETs removed will be the building systems tied into Zone I ventilation (i.e., process tanks, GBs, and B-boxes). The Zone I ventilation is scheduled to be removed in FY04. Remaining room decommissioning activities will take place in FY04. The remaining building utilities, ventilation, and fire systems will be removed during FY05. The building shell will be removed in FY06.

As provided in the DPP, this schedule information is being supplied to add clarity to the DOP and to identify the general planned schedule if full funding is available. The schedule is not an enforceable part of the DOP and DOE or its subcontractors may alter the schedule without penalty and without prior notification or approval of the LRA. Schedule changes will be shared with the LRA in accordance with Section 1.1.1(1) of the DPP, entitled "Timely Sharing of Information," (Ref. 6).

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11.0 PROJECT ORGANIZATION

This section describes the Building 776/777 Closure Project organization structure, functions, and interfaces. As provided in the DPP, this information is being supplied to add clarity to the DOP and to identify reporting relationships and responsibilities. The organizational structure is not an enforceable part of the DOP and DOE or its contractors may alter the structure without penalty and without prior notification or approval of the LRA. Organization changes will be shared with the LRA in accordance with Section 1.1.1(1) of the DPP, entitled "Timely Sharing of Information," (Ref. 6).

11.1 Roles and Responsibilities

The general responsibilities of both internal and external organizations are described below.

11.1.1 Internal Organizations

The management approach of the Building 776/777 Closure Project provides for easily maintained schedule and cost controls. These controls assist the project manager to ensure that the targeted costs and schedule are met. The real-time controls identify changes as requirements dictate, not when the end of the milestone/project is reached and costs have already exceeded the target. This approach provides a format to meet DOE's philosophy, which puts worker safety first, constructs outcome-oriented projects, provides better management and control of finances, and focuses technology. The general responsibilities for the internal organizations are as follows:

<u>Organization</u>	<u>Responsibilities</u>
DOE	<ul style="list-style-type: none">• Enforcement of government regulations;• Enforcement of H&S provisions;• Communications with Site external organizations regarding the closure program;• Oversight of closure operations;• Communications with contractor concerning external and RFFO inputs, including funding and overall direction; and• Interface with other regulatory agencies, stakeholders, and the public.
Contractor	<ul style="list-style-type: none">• Communications with DOE-RFFO and the public regarding closure project status;• Integrated management of the closure project including program and subcontractor funding and guidance;• Approval and transmittal of appropriate documents to DOE-RFFO; and• Performance oversight.
Subcontractors	<ul style="list-style-type: none">• Communications with contractor and employees regarding the performance and status of the closure project;

Subcontractors
(cont'd)

- Demonstrating that alternate methods of performing closure activities comply with regulatory requirements;
- Performing closure activities; and
- Submittal of the closure documentation.

11.1.2 External Organizations

Three independent entities oversee and regulate environmental, health, and safety aspects of DOE activities at RFETS: CDPHE, EPA, and the Defense Nuclear Facilities Safety Board (DNFSB). These entities have executed a Memorandum of Understanding (MOU) with DOE to define their respective roles and responsibilities for oversight of activities conducted in the industrial area (Ref. 56). Individual roles and responsibilities are summarized below.

Organization

Roles and Responsibilities

- | | |
|-------|---|
| CDPHE | <ul style="list-style-type: none">• LRA for regulation, oversight, and enforcement of RCRA/CHWA requirements for hazardous and mixed wastes.• LRA for regulation or oversight of decontamination and decommissioning of fixed structures and equipment, including dismantlement, demolition, and closure of RCRA-regulated units.• LRA for oversight of LLW and regulation of LLM waste disposal on Site or elsewhere in Colorado.• LRA for regulation of RCRA corrective actions and lead oversight of CERCLA response actions. |
| EPA | <ul style="list-style-type: none">• LRA for final selection of remedial alternatives under CERCLA. |
| DNFSB | <ul style="list-style-type: none">• LRA for storage of source, SNM, and byproduct material and radioactive wastes not subject to NRC licensing or CDPHE/EPA regulation. |

In that portion of the Site where each is the LRA, CDPHE and EPA have authority to direct DOE to either stop work or perform particular tasks required under RFCA when conditions present an immediate risk to public health or the environment.

11.1.3 Working Relationships

Internal and external organizations will use the consultative process described in ¶¶ 51 through 61 of RFCA (Ref. 1), and the principles articulated in Appendix 2 of RFCA and Section 1.1.1 of the DPP (Ref. 6) to establish and maintain effective working relationships with each other and with the general public. Per ¶70 of RFCA, CDPHE regulated decommissioning activities under CERCLA. To expedite the decommissioning process, the parties have agreed that CDPHE may exercise authority by participating in the IWCP process. For the purposes of this DOP, "participation in the

IWCP process" means the LRA has an opportunity to discuss issues and ask questions, but it does not mean the LRA has approval authority for IWCP work packages. DOE and the contractor will advise CDPHE of IWCP meetings and roundtable review sessions, and will provide relevant information in a timely manner. CDPHE, DOE, and the contractor may use the roundtable review sessions as a forum for RFCA consultation. If this process does not address CDPHE's concerns and CDPHE believes the planned activities meet the criteria for issuing a "stop work" order under RFCA, CDPHE may issue such an order.

11.2 Team Organization Structure

Program management and control will function under an integrated scope, schedule, and cost control system that identifies responsibilities and interfaces. The project organization, under the direction of a project manager, is an integrated team of qualified individuals for each project. This team will consist of personnel from a number of subcontractors.

Figure 11 and Figure 12 depict the organizational structure of the project.

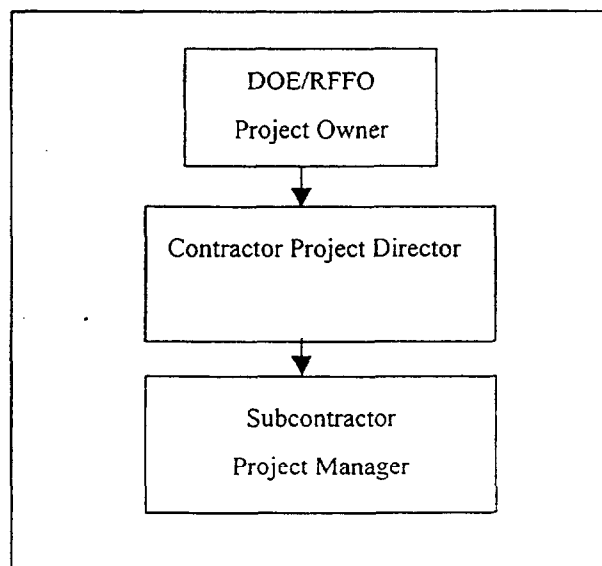


Figure 11. Building 776/777 Closure Project Organizational Chain

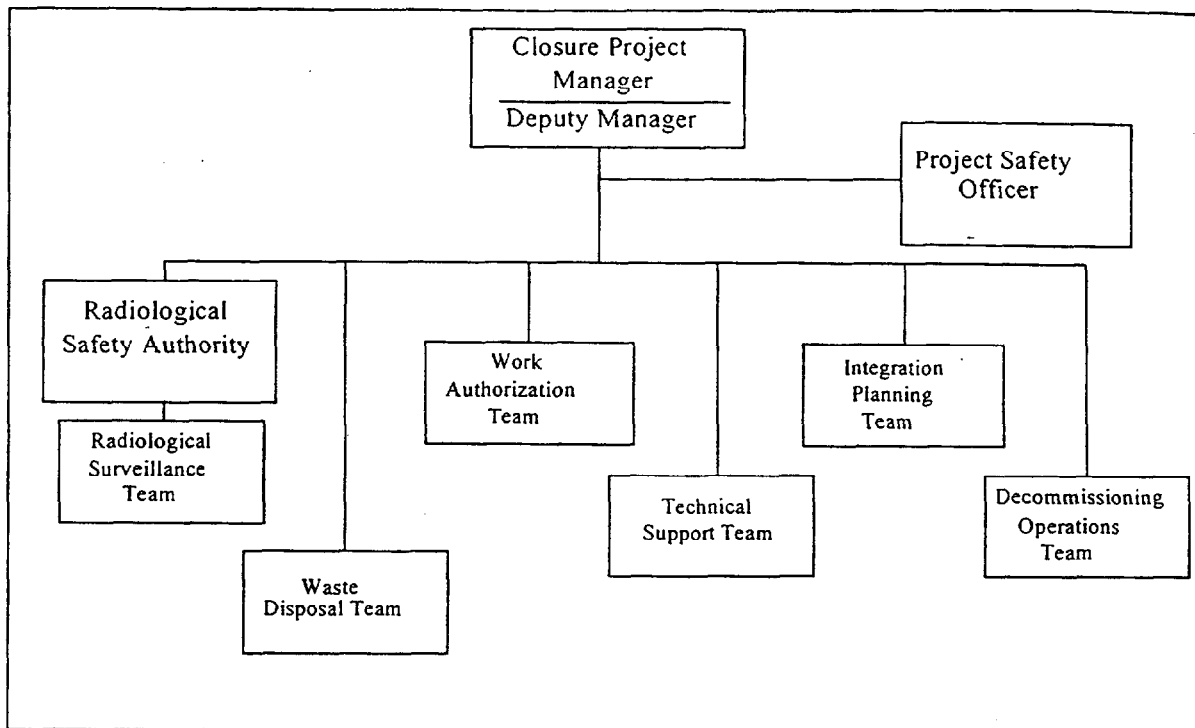


Figure 12. Building 776/777 Closure Project Organization Structure and Functions

The detailed roles and responsibilities of the positions are included at the end of this section. In brief, there is a clear line of responsibility from the Integrator to the Closure Project Manager, through the Work Release Manager, to the Execution Project Managers, and finally to the Enhanced Worker Teams.

- The Project Director is the primary Integrator among all programs and clusters for the Building 776/777 Closure Project. The Director ensures funding is available to accomplish desired tasks and validates schedules.
- The Subcontractor Closure Project Manager is the senior leader of the closure project and has the responsibility to set expectations for performance, establish principles of behavior, and provide the primary senior external interface for the closure project.
- The WA Team Leader is the focal point who maintains the safety and regulatory envelope for the project. This person provides the primary external interface to the site-level safety and regulatory direction and is the link to the COOP improvement. It provides the project constraints to the Project Execution Managers and then gives the day to day authorization to proceed with work similar to the function currently provided by a shift manager.
- The Integration Planning Team Leader is the primary interface to external organizations that are working on the Protected Area Execution Plan and the Ten-Year Plan. Within the closure project, this person has the responsibility to maintain the Project-Closure Plan and to coordinate the distributed planning resources. The plan includes the entire closure project, the Three-Year Plan, as well as the annual, monthly, and weekly plans. The resource

requirements must be projected to allow adequate time for the Technical Support Manager to acquire the resources for distribution to the Project Team Leaders.

- The Project Team Leaders are responsible for executing the defined project work scope. The work scope definition comes from the Project Integration Manager. For example, a Project Team Leader would be assigned to GB removal or to excess equipment removal.
- The Technical Support Manager is responsible for filling a number of resource needs of the Project Team Leaders as predicted by the Integration Planning Team Leader. These resources include all technical aspects including nuclear safety, criticality safety, environmental safety, engineering, etc. This person is the focal point for setting resource priorities. The Closure Project Manager sets the absolute priorities.
- The Decommissioning Operations teams have the self-contained resources to complete the assigned project activity. Some resources will be temporarily assigned to the activity; however, it is the responsibility of the Technical Support Manager to assure that the necessary external resources are provided at precisely the right time. There will be several modes of self-direction depending upon the team experience. This includes self-identification of hazards. Specific resources required are detailed as part of the resource-loaded schedule.

11.3 Team Processes

The process used by the project team follow the CH2MHILL Project Delivery System methodology. These processes include:

- Develop the work plan.
- Obtain project endorsement.
- Authorize work performance.
- Implement work.
- Measure and report work performance.
- Control work to the plan.
- Change the plan if necessary.
- Document work performance and results.
- Communicate.
- Close the project.

11.4 Responsibilities

The contractor assigns responsibility to a person for each element of the WBS. The responsibility depends on the level of the WBS. Managers at the lowest level of the WBS have the responsibility to plan and perform the work in the work package, and to report progress. They may authorize changes in the details of the work package that do not affect the CPB or performance measures.

Changes that meet the Baseline Change Process thresholds must follow the Baseline Change Process as described in Planning and Integration (P&I) Work Instruction INST-002.

11.5 Team Interfaces

Interfaces with other projects include:

- Project No. 02 "Waste Management Project" that affects Building 776/777 consists of WPD #62 "Sanitary Waste Management" and includes management of LLW/LLM waste. WPD #4 "TRU/TRM Storage" includes Venting and Aspirating and management of TRU/TRM waste. WPD #7 "Waste Treatment Project" provides the necessary waste treatment capabilities. Venting and Aspirating drums may be required on an as needed basis. The size reduction airlock may be utilized for characterization and repackaging. Headspace (WIPP) gas sampling, evacuation of TRU and LLW drums, and some glove washing will occur.
- Project No. 06 "SNM Consolidation Project" that affects Building 776/777 consists of WPD #10 "Pu Storage Project" and includes the scope of consolidating Pu.
- Project No. 08 "Pu Metals and Oxides Stabilization Project" that affects Building 776/777 consists of WPD #21 "SNM Processing" and includes the scope of ensuring compliance with HSP Manual (Ref. 26).
- Project No. 09 "Pu Liquid Stabilization Project" that affects Building 776/777 consists of WPD #15 "Residue Sampling" and includes characterization and storage of residues.
- Project No. 11 "Uranium Disposition Project" that affects Building 776/777 consists of WPD #17 "Uranium Decontamination" which includes decontaminating parts stored in Building 776/777.
- Project No. 12 "SNM Shipping Project" that affects Building 776/777 consists of WPD #22 "SNM Shipping Project" which includes the scope related to shipping material off site.
- Project No. 23 "Utilities and Infrastructure Project" that affects Building 776/777 consists of WPD #39 "Utilities Projects" which provides utility services. This effort will continue through deactivation and decommissioning. WPD #40 "Infrastructure Project" provides site-wide infrastructure.
- Project No. 24 "Safeguards and Security Project" that affects Building 776/777 consists of WPD #60 "Safeguards and Security Project" which provides safeguards and security support.
- Project No. 27 "Analytical Services Project" that affects Building 776/777 consists of WPD #41 "Analytical Services Project" which provides analytical laboratory support.

Interfaces with other Site organizations include:

- Site Operations and Integration
- Planning and Integration (P&I)
- Safety Systems and Engineering

- Environmental Systems and Stewardship
- Closure Projects

Interfaces outside of the Rocky Flats organizations include:

- CDPHE
- EPA
- Citizens Advisory Board (CAB)
- Defense Nuclear Facilities Safety Board (DNFSB)
- Rocky Flats Coalition of Local Governments (RFCOLG)

Interfaces with DOE include:

- RFFO

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12.0 COMMENT RESPONSE SUMMARY

The responsiveness summary addressing public comments on the final draft version of this DOP (dated 7/7/99) is attached as Appendix G.

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13.0 REFERENCE INFORMATION

13.1 Acronyms and Abbreviations

Following is a list of acronyms and abbreviations used in this DOP.

AB	Authorization Basis
ACM	asbestos containing material
AHA	Activity Hazards Analysis
ALARA	As Low As Reasonably Achievable
APEN	Air Pollutant Emission Notice
ARARs	Applicable or Relevant and Appropriate Requirements
AR	Administrative Record
ASF	Activity Screening Form
ASRF	Advanced Size Reduction Facility
ATRSC	Allowable Total Residual Surface Contamination
Be	beryllium
BIO	Basis for Interim Operations
BOE	Basis of Estimate
BEST	Basis of Estimate Software Tool
CBDPP	Chronic Beryllium Disease Prevention Program
CCR	Code of Colorado Regulations
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)
CFR	Code of Federal Regulations
CHWA	Colorado Hazardous Waste Act
CHWR	Colorado Hazardous Waste Regulations
CID	Cumulative Impact Document
COEM	Conduct of Engineering Manual
CO ₂	carbon dioxide
D&D	decontamination & decommissioning
COOP	Conduct of Operations
CPB	Closure Project Baseline
cpm	counts per minute

DDCP	Decontamination & Decommissioning Characterization Protocol
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DOP	Decommissioning Operations Plan
DOT	U.S. Department of Transportation
dpm	disintegrations per minute
DPP	Decommissioning Program Plan
EP	Emergency Preparedness
EPA	Environmental Protection Agency
ER	environmental restoration
FBI	Fluidized Bed Incinerator
FDPM	Facilities Disposition Program Manual
FSAR	Facility Safety Analysis Report
FY	fiscal year
GB	glovebox
HASP	Health & Safety Plan
H&S	health & safety
HEPA	high efficiency particulate air (filter)
HSP	Health & Safety Practices (Manual)
HVAC	heating ventilation and air conditioning
ICMS	Integrated Chemical Management System
IDC	Item Description Code
IH&S	Industrial Hygiene & Safety
IHSS	Individual Hazardous Substance Site
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
IWCP	Integrated Work Control Program
JHA	Job Hazard Analysis
LCO	Limiting Condition of Operations
LDRs	Land Disposal Restrictions
LBP	lead based paint
LL	low-level (waste)
LLM	low-level mixed (waste)
LLMW	low-level mixed waste
LLW	low-level waste

LO/TO	lockout/tagout
LRA	Lead Regulatory Agency
mrad	millirad
mrem	millirem
NAAQS	National Ambient Air Quality Standards
nCi	nanocurie
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NIOSH	National Institute of Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
NTS	Nevada Test Site
OSHA	Occupational Safety & Health Act
OU	operable unit
P&I	planning and integration
PBD	Project Baseline Description
PBS	Project Baseline Summary
PCBs	polychlorinated biphenyls
PEP	Project Execution Plan
PHA	Preliminary Hazard Analysis
POD	Plan of the Day
POW	Plan of the Week
PPE	personal protective equipment
ppm	parts per million
Pu	plutonium
QA	quality assurance
QAP	Quality Assurance Program
RCRA	Resource Conservation and Recovery Act
rem	radiation equivalent man
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSPs	Radiological Safety Procedures
RWP	Radiological Work Permit

S&H	safety & health
S&M	surveillance & maintenance
SHPO	State Historic Preservation Officer
Site	Rocky Flats Environmental Technology Site
SME	subject matter expert
SNM	Special Nuclear Material
Sr-90	* Strontium-90
STP	Site Treatment Plan
SWB	standard waste box
TBC	to be considered
TCLP	Toxicity Characteristic Leaching Procedure
TRM	transuranic mixed (waste)
TRU	transuranic (waste)
TSCA	Toxic Substances Control Act
TSD	treatment, storage, and disposal
TU	Temporary Unit
UCNI	Unclassified Controlled Nuclear Information
USQ	Unreviewed Safety Question
USQD	Unreviewed Safety Question Determination
VSS	Vital Safety Systems
WA	Work Authorization
WAC	Waste Acceptance Criteria
WAD	Work Authorization Document
WBS	Work Breakdown Structure
WCF	Work Control Form
WIPP	Waste Isolation Pilot Plant
WPD	Work Proposal Document

13.2 Definitions

Activity. An activity, in terms of the scope hierarchy defined here, is the lowest level of scope the Site maintains in the CPB (P3 schedule, budget/funding baseline). Activities are statused on a monthly basis for reporting of accomplishments against the approved work plan. Any change to the activity scope, schedule or cost (budget or funding) profile is subject to review and approval by the appropriate RFETS Change Control Board prior to proceeding with the proposed change.

Applicable or Relevant and Appropriate Requirements (ARARs). ARARs are promulgated standards, requirements, criteria or limitations that will be met during closure activities to ensure the

protection of human health and the environment and to ensure proper management of waste. A requirement under environmental laws may be either “applicable” or “relevant and appropriate.”

Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. Only those standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable. (40 CFR 300.5).

Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not applicable to a hazardous substance, pollutant, contaminant, remedial action, location or other circumstance at a CERCLA site, their use is well suited to the particular site. Only those standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable. (40 CFR 300.5)

Asbestos. Asbestiform varieties of chrysolite, amosite (cummintonite-grunerite), crocidolite, anthophyllite, tremolite, and actinolite.

Asbestos Containing Material. Material containing more than 1% asbestos.

CERCLA. The Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §9601 et. seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. 99-499, and the Community Environmental Response Facilitation Act, Pub. L. No. 102-26; and the National Contingency Plan and other implementing regulations. (RFCA ¶25[m])

Closure. In the context of RCRA/CHWA hazardous waste management units, closure means actions taken by an owner or operator of a treatment, storage, or disposal unit to discontinue operation of the unit in accordance with the performance standards specified in 6 CCR 1007, §264.11 or §265.111, as appropriate. (RFCA ¶25[p])

Co-located Worker. A worker located 100 meters from the Building 776/777 Cluster. This value was chosen due to RFETS compact dimensions.

Deactivation. The process of placing a building, a portion of a building, structure, system, or component (as used in the rest of this paragraph “building”) in a safe and stable condition to minimize the long-term cost of a surveillance and maintenance program in a manner that is protective of workers, the public, and the environment. Actions during deactivation could include the removal of fuel, draining and/or de-energizing of non-essential systems, removal of stored radioactive and hazardous materials, and related actions. As the bridge between operations and decommissioning, based upon Decommissioning Operations Plans or the Decommissioning Program Plan, deactivation can accomplish operations-like activities such as final process runs, and also decontamination activities aimed at placing the facility in a safe and stable condition. Deactivation does not include decontamination necessary for the dismantlement and demolition phase of decommissioning (i.e., removal of contamination remaining in fixed structures and equipment after deactivation). Deactivation does not include removal of contaminated systems, system components, or equipment except for the purpose of accountability of SNM and nuclear safety. It also does not

include removal of contamination except as incidental to other deactivation or for the purposes of accountability of SNM and nuclear safety. (RFCA ¶25 [y])

Decommissioning. Decommissioning means, for those buildings, portion of buildings, structures, systems, or components (as used in the rest of this paragraph, "building") in which deactivation occurs, all activities that occur after the deactivation. It includes surveillance, maintenance, decontamination and/or dismantlement for the purpose of retiring the building from service with adequate regard for the health and safety of workers and the public and protection of the environment. For those buildings in which no deactivation occurs, the term includes characterization, surveillance, maintenance, decontamination and/or dismantlement for the purpose of retiring the building from service with adequate regard for the health and safety of workers and the public and protection of the environment. The ultimate goal of decommissioning is unrestricted use or, if unrestricted use is not feasible, restricted use of the buildings. (RFCA ¶25[z])

Decontamination. The removal or reduction of radioactive or hazardous contamination from facilities, equipment, or soils by washing, heating, chemical or electrochemical action, mechanical cleaning or other techniques to achieve a stated objective or end condition. (RFCA ¶25[aa])

Dismantlement. The demolition and removal of any building or structure or a part thereof during decommissioning. (RFCA ¶25[ab])

End-Point Criteria. The defined objective(s) or goal(s) that represent the agreed upon facility condition to be achieved during the closure process.

Enhanced Work Planning. A process that evaluates and improves the program by which work is identified, planned, approved, scheduled, coordinated, controlled, and executed.

Facilities. Buildings and other structures, their functional systems and equipment, and other fixed systems and equipment installed therein; outside plant, including site development features such as landscaping, roads, walks, and parking areas; outside lighting and communication systems; central utility plants; utilities supply and distribution systems; and other physical plant features.

Facility Disposition Process. The sequence of activities required to take a facility from its existing condition to final disposition. The goal of disposition is for the Site to accomplish all of the activities necessary either to demolish the building and dispose of the resulting waste or to release the building for reuse.

As discussed in RFCA Attachment 9, unless building specific conditions otherwise warrant, the following activities are typical, but not all inclusive, of those that will be performed for a building: (a) containerized waste and materials removed; (b) Liquid waste and processing systems drained; (c) RCRA units closed or have a closure plan integrated with building disposition plan; (d) all TRUM, defined as materials in excess of 100 nCi per gram, removed; (e) equipment, piping, ducts, GBs, and major electrical components removed (e.g., strip out), (f) radioactive hot spots and hazardous substances removed; and (g) easily removed contamination removed. (DPP, Section 2.1)

Graded Approach. A process that assures safety analysis and documentation preparation is commensurate with the magnitude of the hazards being addressed and the complexity of the facility and/or systems being relied on to maintain an acceptable level of risk.

Hazard. A source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to personnel, or damage to a facility or the environment without regard for the likelihood or credibility of accident scenarios or consequence mitigation.

Hazardous Waste. Hazardous waste is any solid waste that either exhibits a hazardous characteristic (i.e., ignitability, corrosivity, reactivity, or toxicity) or is named on one of three lists published by the EPA in 40 CFR 261, Identification and Listing of Hazardous Waste. To be considered hazardous, a waste must first meet EPA's definition of "solid waste," which includes liquids.

Individual Hazardous Substance Site (IHSS). Specific locations where solid waste, hazardous substances, pollutants, contaminants, hazardous waste, or hazardous constituents may have been disposed or released to the environment within the Site at any time, irrespective of whether the location was intended for the management of these materials.

Interim Measure. The RCRA/CHWA term for a short term action to respond to imminent threats, or other actions to abate or mitigate actual or potential releases of hazardous wastes or constituents.

Interim Remedial Action. The CERCLA term for an expedited response action performed in accordance with remedial action authorities to abate or mitigate an actual or potential threat to public health, welfare, or the environment from the release or threat of a hazardous substance from RFETS.

Involved Worker. Personnel performing work inside the Building 776/777 Complex.

Job Hazard Analysis. An analysis of procedurally controlled activities that uses developed procedures as a guide to address and consider the hazards due to any exposures present during implementation of (job) procedures, the use and possible misuse of tools and other support equipment required by the procedures, and the behavioral motivations of the people performing them. A type of hazard analysis process which breaks down a job or task into component steps, examines each step to determine what hazard(s) exist or might occur, and establishes actions to eliminate or control the hazard.

Lead Based Paint (LBP) Debris. LBP debris where the LBP and debris remain bonded; incidental separation of paint from debris does not trigger classification as hazardous waste requiring disposal at a RCRA TSD facility.

Low-Level Waste (LLW). LLW is any radioactive waste that is not classified as transuranic waste, high-level waste, or spent nuclear fuel. No minimum level of radioactivity has been specified for LLW. LLW mixed with hazardous waste is referred to as low-level mixed (LLM) waste.

No Action with Safe Shutdown Maintenance. This alternative will maintain the 776/777 Cluster in shutdown mode. Building and equipment surveillance activities would be performed on a routine basis. No equipment or hazards would be removed from buildings in the cluster unless the routine surveys of buildings indicated a condition that would compromise the environment or public H&S. In this event, appropriate measures would be taken to mitigate the condition.

Off-Site Individual. A person located at the Site boundary (1999 meters).

Operable Unit (OU). A grouping of IHSSs into a single management unit. (RFCA ¶25[aw])

PCB Bulk Product Waste. Waste derived from manufactured products containing PCBs in a non-liquid state, at any concentration where the concentration at the time of designation for disposal was >50 ppm PCBs. PCB bulk product waste excludes PCBs or PCB Items; but includes: 1) non-liquid bulk waste or debris from the demolition of buildings and other man-made structures; 2) PCB-containing waste from the shredding of automobiles, household appliances, or industrial appliances 3) plastics; preformed or molded rubber parts and components, applied dried paints, varnishes, waxes, or other similar coatings or sealants; caulking; adhesives; paper, Galbestos; sound-deadening or other types of insulation; and felt or fabric products such as gaskets; 4) fluorescent light ballasts containing PCBs in the potting material.

PCB Items. Any PCB Article, Article Container, PCB Container, or PCB Equipment, that deliberately or unintentionally contains, or has as a part of it, any PCB or PCBs. This category includes electrical equipment such as transformers, capacitors and switches.

PCB Remediation Waste. Waste containing PCBs as a result of a spill, release, or other unauthorized disposal, at the following concentrations: (1) materials disposed of prior to April 18, 1978, that are currently at concentrations ≥ 50 ppm PCBs, regardless of the concentration of the original spill; (2) materials which are currently at any volume or concentration where the original source was ≥ 500 ppm PCB beginning on April 18, 1978, or ≥ 50 ppm beginning on July 2, 1979; and (3) materials which are currently at any concentration if the PCBs are from a source not authorized for use under 40 CFR Part 761.

PCB remediation waste means soil, rags, and other debris generated as a result of any PCB spill cleanup, including, but not limited to the following: (1) environmental media containing PCBs, such as soil and gravel; dredged materials, such as sediments; settled sediment fines, and aqueous decantate from sediment; (2) sewage sludge containing <50 ppm PCBs and not in use according to §760.20(a) [relating to uses of sewage sludge regulated under Parts 257, 258, and 503 of 40 CFR]; (3) PCB sewage sludge, commercial or industrial sludge contaminated as a result of a spill of PCBs including sludge located in or removed from any pollution control device, and aqueous decantate from an industrial sludge; and (4) buildings and other man-made structures, such as concrete or wood floors or walls contaminated from a leaking PCB or PCB-contaminated transformer, porous surfaces and non-porous surfaces.

Physically Empty. The condition of a tank or ancillary equipment in which no liquid remains after verification by personnel who are familiar with the tank system or a by proven technology. For example, verification may be performed by draining at low points or by non-destructive testing.

Process Waste. Process waste is solid, hazardous, and mixed waste generated as a result of normal building operations and deactivation activities.

Project Baseline Summary (PBS). The PBS is a formal document that defines a project at RFETS from a DOE reporting structure standpoint. The PBS structure maintained by DOE is very similar to the PBD summary maintained by the operating contractor (see below). The primary difference is how DOE rolls the PBD up to the PBS level for reporting to DOE Headquarters.

Project Baseline Description (PBD). The PBD is a summary of the Work Planning Documents (WPDs) or Work Authorization Documents (WADs), as appropriate, that provides a broad overview of the project scope, assumptions, and other project specific summary items that collectively define

the project. Items included in the PBD are the Project Purpose, Project Scope, WADs included in the PBD and a description of each, assumptions and conditions related to the project, the project execution strategy, specific safety plan for each WAD included in the PBD, Regulatory drivers, the project schedule (where to find the currently approved project schedule), and the project cost plan (summarized by WAD).

Radiological Contamination. Radioactive material present in a location where it should not be present.

Radiological Sources. Radioactive material packaged for use exclusively for its emitted radiation.

RCRA Stable. A step toward RCRA closure, whereby wastes are removed from a RCRA-regulated unit and the possibility of future waste input is eliminated. For tank systems this means a tank and its ancillary equipment have been drained to the maximum extent possible using readily available means, with the objective of achieving less than one percent holdup, and with no significant sludge and no significant risk remaining. Physical means must then be used to ensure no waste is re-introduced to the system (e.g. lock out/tag out, blank flanges). (RCRA Part B Permit and Interim Status Closure Plan, Part X.E)

Remediation Waste. Remediation waste includes all solid, hazardous, and mixed waste; all media and debris containing hazardous substances or listed hazardous or mixed wastes, or exhibiting a hazardous characteristic; and hazardous substances generated from activities regulated under RFCA as RCRA corrective actions or CERCLA response actions, including decommissioning under an approved decision document. Remediation waste does not include waste generated from other activities (e.g., normal building operations and deactivation activities). (RFCA ¶25[bf])

Resource Conservation and Recovery Act (RCRA). The Resource Conservation and Recovery Act, 42 U.S.C. §6901 et. seq., as amended by the Hazardous and Solid Waste Amendments of 1984, the Federal Facility Compliance Act of 1992, and implementing regulations. (RFCA ¶25[ay])

Residues (RES). Pu-contaminated liquids and solids that were once held in reserve at Rocky Flats because they contain Pu in sufficient quantities to warrant treatment for recovery of nuclear material. Residues mixed with hazardous waste are referred to as mixed residues (REM).

RFCA Standard Operating Protocol (RSOP). Approved protocols applicable to a set of routine environmental remediation and/or decommissioning activities regulated under RFCA that RFFO may repeat without re-obtaining approval after the initial approval because of the substantially similar nature of the work to be completed. Initial approval of an RSOP will be accomplished through an interim measure/interim remedial action process.

Safety Analysis Report (SAR). A report that documents the adequacy of safety analyses for a nuclear/non-nuclear facility to ensure that the facility can be constructed, operated, maintained, shut down and decommissioned safely and is in compliance with applicable laws and regulations.

Safety and Health (S&H). As defined in this DOP, a conditional state in which both the public and workers are free from harm. It is also defined as the practice and application of techniques to help prevent illness, injury, death, and property loss as a result of unintentional and undesirable conditions and acts.

Safety Authorization Basis. The combination of information relating to the control of hazards at a facility (including design, engineering analyses, and administrative controls) upon which DOE depends for its conclusion that activities at the facility can be conducted safely.

Safety-Critical Items. Equipment, systems, or components that are necessary to prevent or mitigate the harmful consequences of hazardous materials release.

Sanitary Waste.

Routine Sanitary Waste. This type of sanitary waste is collected in dumpsters located throughout RFETS. Typically these wastes consist of soft or compactable items generated by office/administrative and cafeteria areas and do not required a Radiological Waste Release Evaluation prior to generation or disposal into dumpsters. Typical routine sanitary waste includes: packaging and general office refuse; food waste from cafeteria or offices; non-recyclable paper, cardboard and miscellaneous glass; metal rubber; and plastic items from routine office/administrative operations.

Special Sanitary Waste. Special sanitary waste is sanitary waste that requires specific treatment, analysis, certification, and/or packaging prior to disposal off site. Special sanitary waste includes asbestos and Be waste that is not hazardous waste.

SETs. For decommissioning purposes, SETs are small, manageable groupings of similar equipment and rooms that may be worked independently.

Special Nuclear Material (SNM). Means Pu or uranium enriched in the isotope 233 or in the isotope 235, and any other material determined to be SNM pursuant to the Atomic Energy Act. (42 U.S.C. 2014[aa]).

Standards. As defined by the Department's Standards Committee, "Standards" include "Federal, state, and local laws and regulations; Department Orders; nationally and internationally recognized standards; and other documents (such as industrial standards) that protect the environment and the safety and health of our workers and the public."

Surveillance and Maintenance (S&M). A program established during deactivation and continuing until phased out during closure to provide containment of contamination, physical safety and security controls and maintenance of the facility in a cost-effective manner that is protective of workers, the public and the environment.

Transuranic (TRU) Waste. TRU waste is any waste that is contaminated with alpha-emitting transuranium radionuclides with half-lives greater than 20 years, in concentrations greater than or equal to 100 nCi/gram at the time of assay. TRU waste mixed with hazardous waste is referred to as TRU mixed waste (TRM).

Unreviewed Safety Question (USQ). A process to allow contractors to make physical and procedural changes and to conduct tests and experiments without prior DOE approval as long as the changes do not explicitly or implicitly affect the safety AB of the facility. It also requires that issues with a potential impact to the safety AB be brought to the attention of DOE.

USQ Screening Process. A technique/tool that uses a checklist approach to help determine if suggested changes require a full USQ determination of any effect on the safety AB of the facility.

Work Proposal Document (WPD). The WPD is a subset of the PBS, it defines the scope of work to be performed each fiscal year for each WBS element, the budget required to perform the scope, milestones planned for each WBS element and their end dates. Once approved, the WPD becomes the WAD. This authorization occurs on an annual basis once Congress has appropriated budget to DOE. Several WPDs can roll up to the PBS level but in the case of the Building 776/777 Closure Project, only one WPD (WPD 35) rolls into the summary document (PBS 19). Specific items included in the WPD/WAD are: the fiscal year statement of work (for the current fiscal year plus one year) at the WBS level; DOE- RFFO controlled and other external milestones; fiscal year specific assumptions and conditions; impact of directed funding reduction on work scope and a detailed cost plan (budget profile) by fiscal year for each WBS element (current FY plus 1 FY); and a record of approved changes to the WAD. Several appendices accompany the WAD and provides further detail to the schedule and milestones.

WADlet. The WADlet is the next level of detail under the WAD. A WADlet is a grouping of scope with associated budget and schedule requirements to meet the scope. The WADlet is identified as a WBS element that is required to control and report specific scope conducted to meet the final objective of the WAD. Normally, several scope-similar, summary activities that leads to a significant completion milestone roll up to the WADlet level. An example for Building 776/777 is WADlet 1.1.06.12.02-SNM Removal Operations, which consists of activities such as: performing gamma scans; identifying SNM holdup contamination; verifying GB operability; entering the GB and removing the holdup; and transporting the holdup for thermal stabilization. The two primary completion milestone for this WADlet is removal of all SNM holdup from Building 776/777 and closure of the Material Access Area.

Work Task. A discrete activity made up of procedures performed in steps to achieve an objective goal such as removal of Pu from GBs, removal of a chemical from a storage area or removal of asbestos from a facility area.

13.3 References

- 1 FINAL Rocky Flats Cleanup Agreement, Federal Facility Agreement and Consent Order, CERCLA VIII-96-21, RCRA (3008[h]) VIII-96-01, State of Colorado Docket #96-07-19-01 (July 19, 1996).
- 2 RFCA, Appendix 9, Rocky Flats Vision.
- 3 Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP), latest revision.
- 4 Building 776/777 Reconnaissance Level Characterization Report, Rev. 0, August 28, 1989.
- 5 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9620.
- 6 Rocky Flats Environmental Technology Site Decommissioning Program Plan (DPP), latest revision.
- 7 Rocky Flats Environmental Technology Site Radiological Control Manual, latest revision.
- 8 Integrated Work Control Program (IWCP) Manual (MAN-0710-IWCP).
- 9 Toxic Substances Control Act (TSCA), 15 USC 2601 *et seq.*
- 10 Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition, RFETS Environmental Leadership Team Environmental/Waste Compliance Guidance No. 25.
- 11 Chronic Beryllium Disease Prevention Program (MAN-072-OS&H).
- 12 10 CFR 835, Occupational Radiation Protection.
- 13 DOE Order 5400.5, Radiation Protection of the Public and the Environment.
- 14 The Decontamination & Decommissioning Characterization Protocol (DDCP) is currently undergoing a major revision, in consultation with EPA and CDPHE, per Section 2.3 of the Decommissioning Program Plan (DPP). When complete, the associated Pre-Demolition Survey Plan will be submitted to the LRA for review and approval, per Section 4.6 of this DOP.
- 15 6 CCR 1007-3, Part 261, Identification and Listing of Hazardous Waste.
- 16 6 CCR 1007-3, CFR Part 268, Land Disposal Restrictions.
- 17 Value Engineering Study, RFETS Building 776/777 Glovebox Size Reduction, FINAL REPORT, August 1998, prepared by Solutions Engineering & Facilitating, Inc.
- 18 Property Management Manual (1-MAN-009-PMM), latest revision.
- 19 Brown, C.M., "Evaluation of Potential Cost Impacts from Volume Reduction and Decontamination for TRU Contaminated Systems and Equipment," Kaiser-Hill Company, L.L.C. internal document, September 1998.
- 20 Building 776/777 Complex Basis for Interim Operation (BIO), Rev. 0, March 30, 1999 (draft), Safe Sites of Colorado, LLC.
- 21 DOE Order 5480.21, Unreviewed Safety Question.
- 22 DOE Order 440.1, Worker Protection Management for DOE Federal and Contractor Employees.
- 23 29 CFR 1910, Occupational Safety and Health Standards.
- 24 29 CFR 1926, Safety and Health Regulations for Construction.

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- 25 Building 776/777 Closure Project-Specific Health and Safety Plan (HASP), latest revision.
 - 26 RFETS Health and Safety Practices (HSP) Manual (latest revision).
 - 27 DOE Order 5480.9A, Construction Project Safety and Health Management.
 - 28 Integrated Safety Management System Manual (1-MAN-016-ISM), latest revision.
 - 29 Conduct of Operations Manual (MAN-066-COOP), latest revision.
 - 30 Conduct of Engineering Manual (COEM), latest revision.
 - 31 Site Document Control Manual (1-MAN-001-SDRM), latest revision.
 - 32 Training Users Manual (TUM), latest revision.
 - 33 Rocky Flats Administrative Procedures Manual Operations Review Requirements (1-52000-ADM-02.01), latest revision.
 - 34 Rocky Flats Environmental Technology Site Implementation Plan for the Nuclear Criticality Safety Manual, Rev. 2, December 2, 1996.
 - 35 Rocky Flats Transportation Safety Manuals (PADC-94-01279), December 1995.
 - 36 Rocky Flats Environmental Technology Site Emergency Plan (EPLAN-96).
 - 37 Building 776/777 Emergency Response Operations, Rev. 0 (3-V95-BERO-14.776/777), latest revision.
 - 38 Mixed Residue Compliance Order on Consent (99-09-24-01), including the Mixed Residues Tank Plan.
 - 39 40 CFR 761, Manufacturing, Processing, and Distribution of PCBs in Commerce.
 - 40 Waste Chemical Compliance Order on Consent (97-08-21-02), including the Waste Chemical Project Plan.
 - 41 Waste Chemical Consent Order Number 97-08-21-02, Project Managers' Clarification Paper No. 3 (07/02/98).
 - 42 Potentially Shock Sensitive/Explosive Chemical Characterization, Management, and Disposal Plan, (latest revision).
 - 43 Idle Equipment and Hazardous Waste Tanks Compliance Order on Consent (97-08-21-01), including the Management Plan for Material Contained in Idle Equipment (latest revision).
 - 44 40 CFR 300.440, National Oil and Hazardous Substances Pollution Contingency Plan, Procedures for Planning and Implementing Off-Site Response Actions.
 - 45 Comprehensive Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act (SARA) and the Community Environmental Response Facilitation Act (CERFA), 42 USC 9601.
 - 46 5 CCR 1001-3, Regulation No. 1, Emission Controls for Particulates, Smoke, Carbon Monoxide, and Sulfur Oxides.
 - 47 5 CCR 1001-3, Regulation No. 3, Air Pollutant Emission Notice (APEN).
 - 48 6 CCR 1007-2, CDPHE Regulations Pertaining to the Disposal of Solid Waste.
 - 49 Migratory Bird Treaty Act, 16 USC 701 *et seq.*
 - 50 Fish and Wildlife Conservation Act, 16 USC 661 *et seq.*

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- 51 40 CFR 61, Subpart H, National Emissions Standards for Emission of Radionuclides Other than Radon from Department of Energy Facilities.
 - 52 Rocky Flats Cumulative Impacts Document (CID), latest revision.
 - 53 Endangered Species Act, 16 USC 1531, *et seq.*
 - 54 Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Systems (ANSI/ASQC-E4), 1994.
 - 55 Quality Assurance Program Description, (RMRS-QAPD-001), Revision 2, April 15, 1998.
 - 56 Memorandum of Understanding Governing Regulation and Oversight of Department of Energy Activities in the Rocky Flats Environmental Technology Site Industrial Area, entered into by DOE, EPA, CDPHE, and the DNFSB on February 15, 1996.